DOCUMENT RESUME

ED 465 114 CE 083 469

AUTHOR Smith, Andrew; Oczkowski, Eddie; Noble, Charles; Macklin, Robert

TITLE New Management Practices and Enterprise Training.

INSTITUTION National Centre for Vocational Education Research, Leabrook (Australia).

SPONS AGENCY Australian National Training Authority, Melbourne.

ISBN ISBN-0-87397-021-1

PUB DATE 2002-05-00

NOTE 109p.

AVAILABLE FROM National Centre for Vocational Education Research, 252 Kensington Road, Leabrook, South Australia 5068, Australia (Cat no. 803; $27.50 Australian). Tel: 08 8333 8400; Fax: 08 8331 9211; e-mail: vet_req@ncver.edu.au; Web site: http://www.ncver.edu.au. For full text: http://www.ncver.edu.au/research/proj/nr7024.pdf.

PUB TYPE Reports - Research (143) -- Tests/Questionnaires (160)

EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.

DESCRIPTORS Contract Training; Definitions; Delivery Systems; Educational Demand; Educational Needs; Foreign Countries; Human Resources; Influences; *Job Training; Labor Force Development; National Surveys; Organization Size (Groups); Organizational Change; Organizational Climate; *Personnel Management; Predictor Variables; Private Sector; Questionnaires; *School Business Relationship; Small Businesses; Telephone Surveys; Total Quality Management; *Training Methods; *Training Objectives

IDENTIFIERS *Australia; Impact Studies; Learning Organizations; TAFE (Australia)

ABSTRACT

The changing nature of the demand for training in Australian enterprises adopting new management practices and the implications of those changes for training providers were examined. More than 3,400 private sector enterprises were surveyed by mail, after which follow-up telephone interviews were conducted with 80 human resource practitioners from the original sample. A learning organization, total quality management, and lean production were more common in small- to medium-sized enterprises. Business size was not positively correlated with training practices; however, small businesses tended to develop formal and more innovative methods of training to ensure that the right skills are developed in their workforce. Much training was sourced internally. Many enterprises in the telephone survey sample were undertaking individual training needs analysis and/or introducing performance management systems focusing on individuals' development needs. Training was becoming more formalized with a higher-than-expected incidence of training plans. Behavioral skills were a major focus of training efforts at the enterprise level. Most new managerial practices were associated with higher levels of enterprise training. The following items are appended: the survey questionnaires; statistical analyses of the training and explanatory measures and models of training activity; estimates of the explanatory variables; and the modeling results. (Contains 34 tables/figures and 98 references.) (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 465 114

NCVER

New management practices and enterprise training

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

2B

Andrew Smith

Eddie Oczkowski

Charles Noble

Robert Macklin

BEST COPY AVAILABLE

New management practices and enterprise training

Andrew Smith

Eddie Oczkowski

Charles Noble

Robert Macklin

NCVER

© **Australian National Training Authority, 2002**

This work has been produced by the National Centre for Vocational Education Research (NCVER) with the assistance of funding provided by the Australian National Training Authority (ANTA). It is published by NCVER under licence from ANTA. Apart from any use permitted under the Copyright Act 1968, no part of this publication may be reported by any process without the written permission of NCVER Ltd. Requests should be made in writing to NCVER Ltd.

The views and opinions expressed in this document are those of the author/project team and do not necessarily reflect the views of the Australian National Training Authority.

ISBN 1 74096 021 1 print edition
ISBN 1 74096 022 X web edition
TD/TNC 68.09

Published by NCVER
ABN 87 007 967 311
252 Kensington Road, Leabrook SA 5068
PO Box 115, Kensington Park SA 5068, Australia

www.ncver.edu.au

Contents

Executive summary 5

1 New management practices and enterprise training 9

2 Survey method and sample 25

3 Preliminary analysis of training practices 30

4 Preliminary analysis of explanatory training factors 36

5 Modelling results 42

6 Results of the telephone interviews 46

7 Discussion and conclusions 58

References 63

Appendices

A Survey questionnaires 68

B Statistical analysis of training and explanatory measures 78

C Statistical analysis of models of training activity 80

D Explanatory variables 87

E Modelling results 91

Tables and figures

Tables

1	Sampling frame and responses	25
2	Measures of explanatory variables for training	27
3	Measures of training practices and activities	29
4	Respondents by employee size and ownership type	29
5	Respondents by industry type	29
6	Percentage of payroll spent on training	30
7	Employees and training	31
8	Dichotomous measures of training	35
9	Dichotomous measures of training by size of enterprise	35
10	High correlations between explanatory factors	40
11	Summary of significant explanatory training factors	42
12	Summary of significant explanatory training factors	43
13	Interview respondents by employee size	47
14	Interview respondents by industry type	47
15	Job titles of respondents to interviews	47
16	Incidence of NMPs in responding organisations	48

Figures

1	Team autonomy continuum	13
2	SET theory	14
3	Waves of management fashions as measured by publications	16
4	Reliance on external training	31
5	Engagement with the VET sector	32
6	Formalisation of training	32
7	Focus on behavioural skills	33
8	Workplace delivery of training	33
9	Coaching and mentoring	34
10	Decentralisation of responsibility for training	34
11	Learning orientation	36
12	Total quality management	37
13	Lean production	37
14	Business process re-engineering	38
15	Work team autonomy	38
16	Human resource strategy	39
17	Human resource performance	39
18	Training linked to business strategy	40

Executive summary

Since the early 1980s, Australian enterprises have become exposed to increasing levels of international and domestic competition. In the context of the globalisation of markets and the free availability of technology, enterprises have been compelled to seek improvements in performance from the better utilisation of their human resources. As a result, Australian enterprises, together with their counterparts in other parts of the developed world, have implemented new management practices (NMPs) with enthusiasm in a bid to harness the knowledge and creativity of their workforces.

The introduction of NMPs has a significant impact on employee training. The implementation of change programs often depends on extensive training programs that involve employees at all levels in the enterprise. The results of the National Survey of Enterprise Training undertaken by the Group for Research in Employment and Training (GREAT) and the Research Centre for Vocational Education and Training for the Office of Training and Further Education and the Australian National Training Authority (Smith & Hayton 1999) underscored the importance of this relationship between organisational change and training. The survey demonstrated conclusively that, after size and industry sector, workplace change was the most important determinant of the extent and diversity of enterprise training.

Aims of the research

This research explored the changing nature of the demand for training in enterprises adopting new management practices and the implications for training providers of meeting the requirements of the fragmented training demand created by these changes. The research examined five NMPs:

- the learning organisation
- total quality management
- lean production/high performance work organisation
- teamworking
- business process re-engineering

These five NMPs were chosen because they reflect the most commonly reported organisational change processes in the existing literature. The study addressed five questions concerning NMPs and enterprise training:

1. To what extent are Australian enterprises adopting the new management practices?
2. What human resource practices are associated with the new management practices? Do these human resource practices form recognisable bundles?
3. What training practices are associated with each of the new management practices and how do they relate to other human resource practices?
4. How effectively have Australian enterprises adopting new management practices been able to meet their training requirements from the VET system?
5. What should training providers do to be able to meet the changing demand for training from Australian enterprises?

Methodology

The study involved two forms of research:

- a survey of over 3400 private sector enterprises
- a telephone survey of 80 human resource practitioners to follow up on issues arising from the survey analysis

The survey was mailed out to a range of private-sector enterprises in Australia. To facilitate the reliable and valid measurement of various concepts numerous multi-item measurement scales were employed. These scales were derived from previous studies and/or developed from related literature. The sampling frame employed for this study was derived from the Dun and Bradstreet database of Australian organisations, as of July 1998. The specific sampling frame used in this study relates to the database of identified human resource (HR) managers. This sampling frame was chosen because HR managers are well positioned to make informed comment upon both the implementation of new management practices and training expenditure and practices. The survey was distributed to 3415 HR managers in August 1998. In an effort to improve the overall response rate and to gauge the likely presence of non-response bias, two mail-outs were conducted. The second mail-out commenced three weeks after the first mail-out. Overall, the effective sampling frame consisted of 3241 organisations from which 584 useable responses were gained; this translates to an effective response rate of 18.0%.

The sample for the telephone interviews was developed from a sub-sample of the sample used for the main survey. A group of 200 were selected for contact. Of the 200 enterprises contacted, 78 agreed to participate in a 20-minute telephone interview, representing a 34% participation rate. The research team drew up a protocol for the conduct of the telephone interviews. This is reproduced at appendix E. Interview participants were faxed the protocol for the interview, including a brief summary of the nature and purpose of the research 24–48 hours before the time arranged for interview.

Extent of the adoption of NMPs

The survey revealed a very clear picture on the extent of adoption of NMPs in Australian enterprises. The main points were as follows:

- The enterprises in the sample have a relatively strong pre-disposition for a learning organisation philosophy, the use of total quality management (TQM) and the use of lean production methods.
- Learning orientation, TQM and lean production are more common in small- to medium-sized enterprises with some industry concentration in manufacturing, retail, construction and finance/business services sectors.
- The use of business process re-engineering methods is less widespread and more evenly distributed by enterprise size and industry type.
- The use of work teams is quite widespread with 63% of enterprises reporting their use of work teams.
- In enterprises where work teams have been established, the majority of employees are usually involved but with only a limited level of decision-making discretion. However, smaller enterprises tend to involve more employees in teams and grant them more autonomy.

The impact of NMPs on training

Learning orientation is highly correlated with a surprisingly large number of the training factors. The presence of a learning orientation appears to drive:

- a higher level of training expenditure
- a proportionately greater attention to the training of managers
- a focus on training for behavioural skills

- a greater use of coaching and mentoring
- a greater level of decentralisation of responsibility for training to line managers

Total quality management appears to be more common in small- to medium-sized enterprises in manufacturing, construction and retail. From the results of this study TQM appears to drive:

- a higher level of engagement with the VET sector (use of competency standards for training and accredited training) but,
- a lower level of reliance on external training providers. These findings together suggest TQM is a factor in the provision of accredited training for employees using in-house training resources
- a focus on training for behavioural skills
- the decentralisation of responsibility for training to line managers

Lean production is consistently associated with cost-cutting measures reducing the formality of training and the level of infrastructure devoted to training in enterprises. Lean production appears to drive:

- a more informal approach to the training process
- less likelihood of a training plan existing
- less likelihood of a training manager or workplace trainers/instructors existing

Business process re-engineering appears to drive:

- higher engagement with VET (use of competency standards and accredited training)
- a higher degree of workplace delivery of training and the use of coaching/mentoring
- more even distribution of training between full-time and part-time/casual employees

Teamworking. A high level of teamworking appears to drive:

- a more even distribution of training amongst all categories of employees
- a higher level of workplace delivery of training and use of coaching/mentoring
- greater decentralisation of the training function

Higher work team autonomy appears to drive:

- a greater use of external training provision
- greater formalisation of training

Key findings from the project

The survey and the telephone interviews have identified important findings in six key areas:

- *Small business*. The survey revealed that size was not positively correlated with any training practices except for the existence of a training manager. It is the adoption of NMPs such as TQM and teamworking in particular that have emerged as the most important explanatory factors for training. Small businesses are high adopters of organisational change and are, therefore, likely to make significant investments in training. However, the infrastructure for internal training is not so well developed in small business. Thus, small business will tend to develop less formal and more innovative methods of training to ensure that the right skills are developed in the workforce.
- *The use of the VET system*. An important finding from the research is that much training is sourced internally. Organisations do not rely heavily on external training. The telephone interviews revealed a relatively high use of private training providers and consultants. However, private providers tended to be used only for certain specialised forms of training. The use of TAFE by enterprises in both the surveys and the telephone interviews was quite low. However, many enterprises in the telephone survey highlighted the importance of TAFE for the training of individuals. This highlights an increasingly important role for TAFE as a major provider of adult retraining and professional development. This lack of engagement with the VET sector was further highlighted by the

low use made of competency standards for training within enterprises. Most of the training carried out at the enterprise level in Australian organisations is not based on competency standards and would, therefore, carry no recognition within the National Training Framework.

- *Importance of the individual*. Many of the enterprises in the telephone survey sample were undertaking individual training needs analysis and/or introducing performance management systems that focussed on the development needs of individuals. There was a distinct move away from traditional methods of training which imposed the same training programs on groups of employees or all employees. Enterprises were increasingly concerned to focus their training activities so that they could achieve value for money and this process involved a shift towards individualised training programs. Thus, not only are individuals becoming more important in driving the provision of training within enterprises, they are also increasingly the focus of much of the training investments that are being made.
- *Nature of training*. Training is becoming more formalised with a higher than expected incidence of written training plans and the use of formal needs analysis processes to determine the training requirements of the enterprise. Responsibility for training is increasingly decentralised to line managers and the incidence of specialist training departments and training managers is quite low. At the same time there is an increasing number of workplace trainers/instructors, which suggests that training is being delivered primarily internally and by non-specialist training staff. Enterprise training is not linked to the National Training Framework. Competency standards are not being used to inform most enterprise training and much of the training remains uncredentialled. This raises the issue of the skills of workplace trainers/instructors. The apparent low level of accreditation or understanding of the national standards suggests that few workplace trainers/instructors have received much training in how to train and instruct. This raises serious concerns about the quality of enterprise training delivered by workplace trainers.
- *Importance of behavioural skills*. The results of this survey show that behavioural skills are a major focus for training effort at the enterprise level and that many of the new management practices demand these skills from employees. This suggests a shift in the nature of skill requirements at the enterprise level away from narrow technical skills and towards a new training paradigm that emphasises the need for developing broad sets of generic skills in the workforce in order to increase adaptability. The VET system, with its focus on technical, job-related training, may not be well placed to deliver the kind of training that employers need. Thus, enterprises are compelled to provide the training themselves and in so doing, do not turn to the VET system to meet their requirements.
- *Organisational change*. The research has shown unambiguously that most NMPs are associated with higher levels of enterprise training. TQM, teamwork and learning orientation are all associated with higher levels of training activity and a greater diversity of training. Lean production, understood in most enterprises to be synonymous with cost reduction, is associated with the reduction of training activities. However, teamwork, the most prevalent of the NMPs investigated in this study, is associated with a more even distribution of training in the workforce and, where teams are given reasonable levels of autonomy, with more formalised and externally sourced training.

1 New management practices and enterprise training

Since the early 1980s, Australian enterprises have become exposed to increasing levels of international and domestic competition. In the context of the globalisation of markets and the free availability of technology, enterprises have been compelled to seek improvements in performance from the better utilisation of their human resources. As a result, Australian enterprises, together with their counterparts in other parts of the developed world, have implemented the new management practices (NMPs) with enthusiasm, in a bid to harness the knowledge and creativity of their workforces (ABS 1996).

Overseas research, particularly in the USA, has shown that the adoption of NMPs is gradually becoming more widespread. It has been estimated that, by the early 1990s, over one-third of American establishments had implemented at least two NMPs (such as TQM, teamworking etc.) to the extent that they impacted on over 50% of the workforce (Osterman 1994; Appelbaum & Batt 1994). Moreover, it appears that these changes are frequently accompanied by an increase in the extent of training provided in enterprises, and by a switch from conventional, technical training to training that emphasises the behavioural skills of employees such as interpersonal and problem-solving skills (Cappelli & Rogovsky 1994; Osterman 1995). There has been little complementary research conducted into the extent and implications of organisational change in Australia. However, data from the Australian Workplace Industrial Relations Survey (AWIRS 95) show that over half of all Australian workplaces underwent significant structural change in 1995. This figure rises to over three-quarters for larger workplaces (Morehead et al. 1997). Figures from the Australian Government appear to indicate that between 20% and 30% of Australian enterprises had adopted TQM and/or JIT methods in 1993 (Department of Industry, Science & Technology 1996). This scale of adoption was confirmed by the Industry Training Studies survey of training practices in 1995 (Smith & Hayton 1999). The case study component of that research also showed that training requirements were shifting towards general, behavioural skills and away from traditional technical skills.

Each of these NMPs implies a different approach to the management of the enterprise. However, a common thread running through these programs of organisational change is the extensive use of teamwork to motivate employees and gain increased flexibility by devolving responsibility for decision-making to lower levels in organisations. The level of responsibility and autonomy devolved to teams varies significantly and, as recent research has shown (MacDuffie 1995; Dyer & Reeves 1995), is accompanied by a variety of new human resource practices or 'bundles'.

However, as the above list implies, approaches to organisational change have often been programmatic and episodic in nature (Rogers 1983). Managers, keen to secure quick returns, have embraced one new management philosophy after another (Gill & Whittle 1992; Abrahamson 1996). Many Australian enterprises have been subjected to wave after wave of organisational change programs, some of them quite contradictory in nature.

NMPs may have also been linked to the adoption of new forms of human resource management (HRM). Legge (1995) has enumerated the global changes that led to the emergence of HRM from the old husk of personnel management in the 1980s. These included the globalisation of competition, the example of Japanese enterprises held up in the early 1980s as exemplars for western enterprises, particularly in their management of human resources (Ouchi 1981) and finally, the growth of the 'enterprise culture' as a result of the application of neo-classical macroeconomic policies that provided a benign environment for the growth of a new approach to employee relations. NMPs are frequently taken up by enterprises as a complement to HRM, as part of an effort to develop the commitment of employees.

NMPs may also have a significant impact on employee training. The implementation of change programs often depends on extensive training programs that involve employees at all levels in the enterprise. The results of the National Survey of Enterprise Training undertaken by GREAT and the Research Centre for Vocational Education and Training for the Office of Training and Further Education and the Australian National Training Authority underscored the importance of this relationship between organisational change and training. The survey demonstrated conclusively that, after size and industry sector, workplace change was the most important determinant of the extent and diversity of enterprise training (Smith & Hayton 1999). It is, therefore, not surprising that training often appears as an essential element of the new human resource bundles.

Smith and Hayton's work confirms the US research findings that the introduction of NMP's and teamwork, in particular, requires new sets of general, behavioural skills from employees. However, the demand for training created by the adoption of NMPs may differ significantly. For example, the training requirements for the implementation of Japanese-style production teams under lean production will be quite different from those associated with the creation of temporary, cross-functional, problem-solving teams under TQM. However, as recent research in the USA suggests, extensive training is an essential concomitant of the successful implementation of teamwork, regardless of type (Banker et al. 1996). Thus training provision and training demand in enterprises will differ according to the management philosophy that is currently operational. Many enterprises may lurch from one set of training needs to another as they pass through successive waves of organisational change.

What are new management practices?

Abrahamson (1997) and others have shown that the proliferation of NMPs is no modern phenomenon. The use of NMPs is often traced back to the introduction of scientific management by Frederick Taylor in the early 20th century (Taylor 1911). Taylor's concern was that in the large enterprises that had developed under late 19th century capitalism in the United States, managers were beginning to lose control of the production process on the shop floor. Managers seemed to have no techniques that would enable them to control the large immigrant workforces that populated these turn-of-the-century workplaces. Scientific management comprised a group of simple techniques that placed control of the production process firmly in the hands of managers and enabled them to extract the maximum effort from their employees in return for higher wage levels. Since that time, management researchers have developed numerous management techniques based on different theoretical approaches to the behaviour of employees in the workplace (Weisbord 1984). Principal amongst these new approaches to management have those based on human relations theory (Mayo 1945) developed in the 1930s and 1940s, those based on systems theory developed in the 1950s (von Bertalanffy 1968) and those based on contingency theory developed in the 1970s (Child 1984).

However, the growth of management techniques appears to have accelerated since 1980 with a large number of NMPs appearing and being adopted by enterprises in an attempt to improve their global competitiveness (Hilmer & Donaldson 1996). It seems that the increasing level of competition and the generally low level of growth experienced in western economies since the early 1970s has led to managers searching for ways of improving the performance of their enterprises by managing the resources of the enterprise better—particularly their human resources which have come to represent a source of sustainable competitive advantage in the face of the easy availability of new technology (Barney 1991). This research is concerned with the impact of NMPs developed since the early 1980s including:

- total quality management (TQM)
- teamworking
- lean production/high performance work organisation
- business process re-engineering
- the learning organisation

Total quality management (TQM)

Total quality management (TQM) takes a broad approach to the problem of quality. The body established in Australia to co-ordinate the introduction of TQM, the Total Quality Management Institute (TQMI), defines the process as:

> *Total quality management is the management philosophy that seeks continuous improvement in the quality of performance of all processes, products and services of an organisation. It emphasises the understanding of variation, the importance of measurement, the role of the customer and the involvement of employees at all levels in an organisation in pursuit of such improvement.*

TQM was adopted widely in Australian enterprises in the early to mid-1990s, although often under a variety of names such as *total quality control* (TQC), *value adding management* (VAM) or *common interest program* (CIP). Although differing in detail and emphasis, all are expressions of the same TQM philosophy described in the TQMI definition above.

TQM is based on the work of two American experts on quality control who initially developed their ideas during the reconstruction of post-war Japan—W Edwards Deming and J M Juran. In the 1950s Deming showed Japanese industrialists how they could control quality in production through the application of simple *statistical process control* (SPC) techniques (Deming 1982). The key to SPC was the concept of variation. The quality of all production systems varies, but SPC techniques allow employees to track the variation and control it, thus ensuring a consistently high level of quality without the need for the large numbers of inspectors and checkers typically found in western enterprises. Juran demonstrated that the successful implementation of the new quality control techniques demanded a different managerial style to the traditional hierarchical, western model. Responsibility had to be given back to the worker and the deep knowledge within the workforce of the production system had to be successfully tapped by managers in order to guarantee further improvement (Juran 1962).

Despite the proliferation of varieties of TQM, most variants of the system are based on three guiding principles (Dean & Snell 1991; Sitkin et al. 1994)—customer satisfaction, continuous improvement and treating the organisation as a total system. Customer satisfaction in TQM refers not only to the external customer/client of the enterprise but also to internal customers. Under TQM, the processes of the enterprise are identified and analysed into discrete units. Each unit within the enterprise operates both as a supplier to some other unit in the enterprise and as a customer of a previous unit. Thus, all transactions in the enterprise can be analysed in terms of customer–supplier relationships. TQM exhorts all employees to ensure that they give total quality to their customers and, at the same time, demand total quality from their suppliers. This is based on the collection of hard quality data, often through processes such as SPC, so that the performance of the different units in the enterprise can be measured.

The measurement of the performance of the units of an enterprise, leads to the second TQM principle of continuous improvement (sometimes known by its Japanese name of Kaizen). This involves employees systematically searching for and surfacing recurrent problems in the process. Often this search and surface activity is conducted in TQM teams or groups who may meet periodically for this purpose. The role of TQM is in gathering data and analysing the data in order to find readily operationalised solutions to problems. Because the problems are usually routine and low in uncertainty, great efficiency gains are often made from the operation of continuous improvement.

Finally, TQM treats the enterprise as a system, using the basic concepts of systems theory to break the enterprise into sub-systems that interact with one another in the course of the production/service process. Such a view naturally lends itself to the customer–supplier notions of TQM. It also entails the system-wide search for solutions to problems. TQM advocates the tracing of problems to their source in the enterprise rather than using temporary, patchwork solutions and therefore creating a chain of causality which guides the TQM process (Snell & Dean 1992).

TQM programs became very popular in Australia in the early 1990s. Backed by the Federal Government, the TQMI was established in 1987 as an umbrella body and now boasts over 100 member organisations including such large organisations as Telecom Australia, Ford, Kodak, Esso and IBM. By 1995, research by the Group for Research in Employment and Training at Charles Sturt University and the Research Centre for Vocational Education and Training at UTS showed that most Australian organisations were involved in some form of quality

improvement program. Quality improvement and TQM, in particular, had become a major driving force for training in many Australian organisations with large numbers of employees undergoing training in problem-solving and teamwork skills in order to facilitate the introduction quality improvement programs (Smith & Hayton 1999).

Teamworking

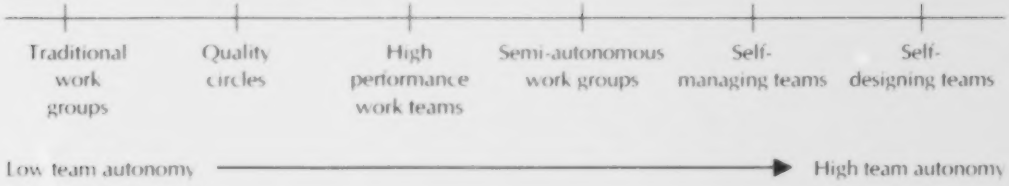
A key element of TQM is the emphasis on small groups and teamwork. This emphasis is not new. Eric Trist and his colleagues at the London-based Tavistock Institute of Human Relations developed the notion of the self-directing work team as the basis for their successful consultancy with the British National Coal Board in the 1950s (Trist 1963). From this work the Tavistock group developed the highly influential socio-technical systems approach to organisational change which put the development of effective work teams (sometimes known as semi-autonomous workgroups) at the centre of the change process. Socio-technical designs became the focus for the attempts in the 1960s and 1970s by large European and American organisations to counter the effects of routine, fragmented factory work on the motivation of the workforce. Known as *quality of work life* (QWL), these experiments stressed the importance of redesigning jobs to include higher levels of worker control and group work. However, most of these QWL programs did not survive for more than a few years and many of the organisations that had experimented with them returned to more traditional patterns of organising work in the late 1970s and 1980s. QWL programs were very rarely linked into the business plans of the enterprises and thus suffered in times of economic downturns (Auer & Riegler 1990).

Despite the mixed success of QWL, the notion of teamwork has proved very durable and has undergone a renaissance in the 1990s. Again, the influence of Japan has played a major role in the renewal of interest in teamworking. Although not associated with QWL, large Japanese corporations have been using a similar, though more restricted, version of teamwork on the shopfloor for a number of years. Banker and his colleagues in their research on the impact of teamwork in manufacturing organisations (Banker et al. 1996) identified six variants of modern teamworking:

- *Traditional workgroups*. This is the traditional work organisation in which workers have no responsibility and in which the ancillary functions are carried out by staff specialists. This form of work organisation is the outcome of the application of scientific management.
- *Quality circles*. Quality circles are voluntary groupings of workers that meet to solve quality-related problems in the workplace. These teams play no part in the regular work organisation and for this reason are sometimes referred to as 'off-line' teams.
- *High performance work teams*. These are teams embedded in the process of the enterprise, so they are not off-line. They have responsibility for important but routine activities, within a strict hierarchical structure. The decision-making authority enjoyed by these teams is more than a quality circle but less than a semi-autonomous team.
- *Semi-autonomous workgroups*. These teams are very closely integrated into the production system. Typically a semi-autonomous team will consist of 6–8 members under the direction of a team leader who will also be a production worker. A number of team leaders report to a supervisor. This type of team does not necessarily involve any job redesign, although members will be flexible enough to cover each others' jobs in cases of absence and may carry out simple maintenance tasks.
- *Self-managing teams* (or autonomous workgroups). Based on the Scandinavian workgroup concept, this type of team usually involves much more extensive job redesign with members responsible for setting their own work targets and organising themselves to control large sections of the work process. This form of organisation has considerable implications for the role of the supervisor.
- *Self-designing teams*. These are a more autonomous variant of the self-managing team. In this situation the team has control over the design of the team and over who should belong to the team.

The major difference between these six variants is the level of autonomy that they possess to make decisions in the workplace. They are represented in figure 1 which places the variants on a continuum of autonomy.

Figure 1: Team autonomy continuum



Source: Banker et al. (1996, p.868)

Teamwork appears to be the most common of the NMPs, and the most enduring. The longevity of teamwork is, perhaps, a result of its incorporation into other NMPs such as TQM and lean production. However, the most common form of team seems to be Banker's high performance team, in which the team exercises relatively little control over their own activities but uses its collective skills to improve the performance of the enterprise (Osterman 1994; Appelbaum & Batt 1994). However, research in the United States has shown that a higher degree of autonomy does not necessarily reduce the productivity and quality gains associated with high performance teams (Shaiken et al. 1997).

Lean production/high performance work organisation

Lean production incorporates all the features of TQM and teamwork but combines them into a system of work organisation that allows enterprises to run their operations with a minimum of resources (Womack & Jones 1994). Thus in a typical lean production situation, the enterprise will run with a minimum of inventory, use a just-in-time system for deliveries from suppliers, form the workforce into high performance teams and implement TQM methods to eliminate problems in the production/service process.

The notion of lean production was popularised by the MIT study of car assembly plants worldwide conducted in the late 1980s and reported in *The machine that changed the world* (Womack et al. 1990). The MIT authors and others since (Adler & Cole 1993) argued that the reason for the success of the Japanese car industry had been its vigorous adoption of lean production methods. They also argued that the history of Japanese 'transplants' in the USA shows that there is nothing culturally specific about lean production but that it can be successfully introduced into countries outside Japan. Studies of successful transplants such as the Toyota–General Motors joint venture in California (NUMMI) have demonstrated that adoption of lean production methods results in very high levels of productivity and product quality.

However, this research has led to considerable debate about the real effectiveness of lean production, particularly in comparison to work organisation based on more human-centred approaches using autonomous teams such as those pioneered by Volvo and other Scandinavian enterprises (Berggren et al. 1994).

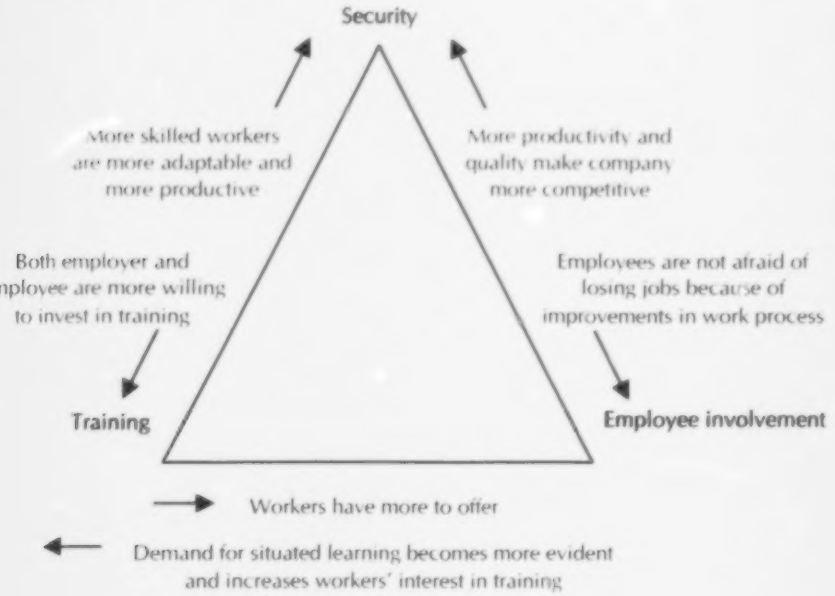
High performance work organisations combine some of the elements of lean production but combine them with a more human-centred approach (Cappelli & Rogovsky 1994). High performance workplaces have adopted a set of employment practices that are designed to gain the commitment of employees including:

- employee empowerment and participation in decision-making
- teamwork: quality circles, QWL programs, semi-autonomous teams etc.
- job rotation and cross training
- supportive personnel policies including profit sharing, job security, pay for skills training in communication and interpersonal skills

These practices are designed to foster employee commitment so that enterprises can develop a highly skilled workforce which is trained to innovate and retain a competitive edge in the international economy through new product development rather than low cost production. The full extent of the adoption of these practices by US enterprises is the subject of much debate but estimates suggest that by the mid-1990s, over half of American workplaces had adopted two or more high performance work practices (Osterman 1995).

This high performance work organisation has been described by the acronym SET standing for *Security of employment*, *Employee involvement* and *Training*. SET workplaces can be contrasted with the traditional JAM workplace that is based on *Job classifications*, *Adversarial employee relations* and *Minimal training* (Brown et al. 1993). The three elements of the SET system are interlinked. One cannot be fully implemented without the others. Thus, employees will only become involved with the company's decision making if they are assured of job security. Similarly job security, or rather its obverse, employment stability, plays a significant role in the company's decision to train as it will not train workers likely to leave the company for higher wages elsewhere. These three elements exist in an interlocking relationship shown in figure 2.

Figure 2: SET theory


Security
More skilled workers are more adaptable and more productive
More productivity and quality make company more competitive
Both employer and employee are more willing to invest in training
Employees are not afraid of losing jobs because of improvements in work process
Training
Employee involvement
Workers have more to offer
Demand for situated learning becomes more evident and increases workers' interest in training

Source: Brown et al. (1993, p.250)

Business process re-engineering (BPR)

Business process re-engineering (BPR) has been described as the latest 'fad' in the management of enterprises (Mumford & Hendricks 1996). Based on the work of Hammer and Champy (1993), BPR is premised on the notion that few organisations have been able to take full advantage of advances in information technology because of the way in which their processes are organised. Hammer and Champy argue that merely automating existing processes, which may have remained unchanged for many years, will not yield a sufficient return to the enterprise in terms of improved performance. BPR is a system for reviewing the processes inside enterprises so that they can be effectively automated. BPR advocates are noted for using colourful language to describe the processes involved in BPR such as 'smash the hierarchy' or 'obliterate not automate' (Wilmott 1995). However, the process of BPR incorporates many aspects of the other NMPs discussed above (Conti & Warner 1994). Thus, BPR involves assigning cross-functional teams to investigate and review the core processes of the enterprise. The teams then re-organise the work processes to maximise the value added in the process and go on to initiate continuous improvement. Thus, BPR incorporates elements of TQM and teamwork but takes a more radical approach.

Critics of BPR however, have shown that there is great confusion about exactly what BPR involves. As a result, enterprises tend to implement BPR in different ways and will reinterpret the message of BPR to suit their own internal purposes. Often, this has resulted in BPR becoming associated with heavy programs of downsizing, especially amongst white-collar and management groups which have hitherto escaped retrenchment (Littler et al. 1997). Drago (1996) has shown that BPR has been a major contributor to the creation of 'disposable' workplaces in which managers can force change through the threat of closure or downsizing.

The connection between BPR and downsizing has meant that few enterprises have found employees willing to take part in a participative approach to BPR when their own jobs may be at stake. Thus, there is little evidence of the extent of adoption of BPR and many believe that it may take up to 15 years for the concept to be taken up in its pure form by enterprises (Conti & Warner 1994).

The learning organisation

Over time, however, some organisations continue to change and improve whilst others find it more difficult. A learning process would, therefore, appear to take place within organisations which enables them to survive in changing environments. Early organisational learning theorists, Fiol and Lyles (1985), described organisational learning as:

> *... the process of improving actions through better knowledge and understanding.*

Yet there is a difference between organisational and individual learning. Organisational learning is not simply the sum of the learning of each of the individuals in the enterprise. Organisational learning implies a capacity to transmit the lessons from one generation of employees to another and to adapt as a result of the learning process.

The processes of adaptation and learning are not the same. Adaptation is the process of adjustment to changing circumstances. Organisational learning is a much deeper process involving the development of insights and knowledge over a long period of time and the ability to critically assess the assumptions on which the organisation is basing its actions. Argyris and Schon (1976) first pointed to the distinction between these two processes in organisations. They distinguished between single-loop and double-loop learning. Single-loop learning is essentially equivalent to adaptation. It is short-term, behavioural change often associated with previous behavioural responses to similar situations, for example, discounting the price of products when demand slumps. Double-loop learning involves a process of questioning the assumptions on which the organisation is acting. It occurs throughout the organisation and has implications for everyone.

Senge (1990) identified five conditions for organisational learning to take place.

- *Systems thinking.* As in TQM, systems thinking involves looking at the organisation as a whole system in which changes to one part of the organisation necessarily produce changes in another. Senge regards systems thinking as difficult for many managers who are conditioned to think in terms of single causes for events. Thus, change programs may be initiated anywhere within organisations. Managers need to recognise and capitalise on changes that take place rather than attempting to fit the organisation to their own view of how change should proceed.
- *Personal mastery.* The learning organisation fosters growth and development in all its employees. However, it is the responsibility of individuals to take charge of their own destiny and create their own opportunities for personal development. Thus, an organisational commitment to learning can only be realised by individuals taking responsibility for their own learning.
- *Shared mental models.* The means of overcoming the gap between individual and organisational learning is through sharing mental models. Kim (1993) has shown that mental models are the routines and frameworks that we use everyday to make sense of the world and guide our actions. In the course of individual learning these mental models change but this does not benefit the organisation unless we can share these models and how they change with others so that others can learn also. The learning organisation adopts strategies to enable the sharing of mental models to take place so that organisational learning can occur.
- *Shared vision.* This is a notion taken from the theory of leadership. A good leader has a personal vision that he or she is able to articulate to other members of the organisation. Thus, in the learning organisation, leadership is a well-distributed capability and all members have their own personal visions relating to their work and their careers. The learning organisation allows its members to share these visions and to subscribe to a common vision that binds them together.
- *Team learning.* At the heart of the learning organisation is teamwork. Effective teamwork allows all the members of the team to learn together and to set their own direction in line with the shared vision of the organisation.

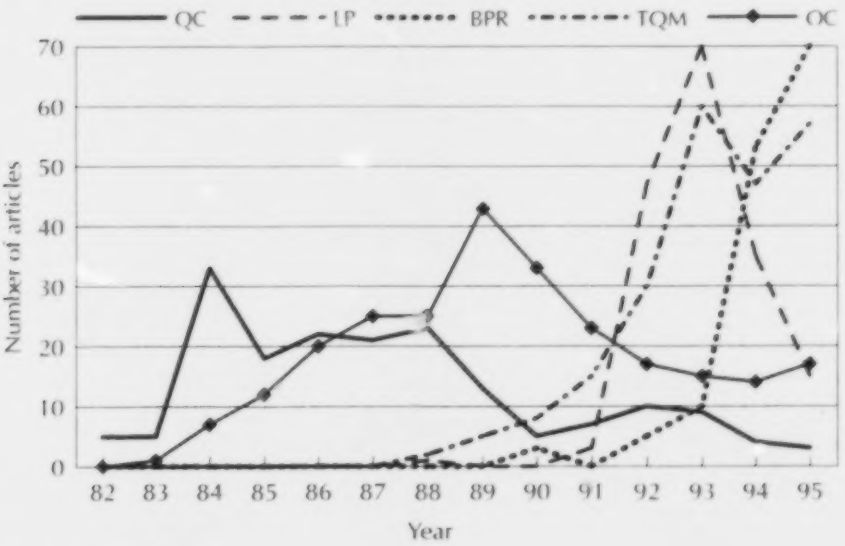
A particular difficulty with the notion of the learning organisation is to what extent organisational learning is simply the sum of all the individual learning that goes on within the organisation or whether it is possible for the organisation to learn apart from its individual members. The learning organisation provides opportunities for the individual to learn and develop by, but it must also have ways of ensuring that individual learning is retained for the benefit of the organisation. This is the role of memory. Just as individuals learn through committing lessons to memory, so organisations learn by developing procedures that act as an organisational memory. Thus, the learning organisation must be able to develop procedures that ensure that the fruits of individual learning are recorded and used by other members of the organisation.

However, the popularity of the concept of the learning organisation has yet to be justified by research showing its adoption by many organisations. Research conducted in Britain (Raper et al. 1997) suggests that, whilst some individual elements of the learning organisation may be present, there are few if any organisations that have implemented the learning organisation as a 'total package' and that Senge's idea may remain an ideal towards which organisations strive rather than an empirical reality.

The development and diffusion of NMPs

The prevalence of NMPs and the way in which they are adopted and later discarded by enterprises have prompted some commentators to view them as 'fads' which managers follow in the same way that other ephemera sweep society (Shapiro 1995). From this point of view NMPs have little intrinsic worth but are symptomatic of fashion-conscious managers who wish their organisations to be seen to be at the cutting edge of management theory. Hilmer and Donaldson (1996) also view these techniques and others as fads but see their emergence as symptomatic of a deeper problem within enterprises—the marginalisation of professional management. In their view, NMPs substitute technique for the judgement and action of managers who have been marginalised in modern organisations to the point where many of them have lost their jobs through downsizing—perhaps as a result of the implementation of re-engineering or some other fad.

Figure 3: Waves of management fashions as measured by publications



Source: Kieser (1997, p.51)

Fashion theory provides a number of explanations for the development and adoption of NMPs (Kieser 1997). Using fashion theory it is possible to see consultants as the key developers of management fashion who sell their new techniques to managers, desperate to find solutions to the problems posed by increasing competition. Academics and management writers are drawn into the management fashion market so adding legitimacy to the fashions themselves. The adoption of management fashions is through a 'trickle-down' process in

which larger enterprises adopt the new techniques, quickly followed by smaller enterprises keen to keep up with the latest fashion trends. At the point at which most enterprises are involved with the new technique, the larger enterprises will discard the fashion because it no longer confers exclusivity upon them and will search for a new management fashion to adopt. The use of fashion theory to explain the development and diffusion of NMPs has parallels in management theory. Neo-institutional theory explains the diffusion of innovations through organisations using the concept of mimetic isomorphism (DiMaggio & Powell 1983) which proposes that organisations will copy one another as they strive to become the same or follow a lead organisation. NMPs can be diffused by the same mechanism as other innovations.

Abrahamson (1991; 1996) has proposed the most complete theory to date of the process of management fashion setting and the adoption of management fashions by organisations. According to Abrahamson, management fashions are developed by management fashion setters who disseminate their fashions through the media and through academia. The diffusion of management fashions is governed by forces that govern the propensity of managers to adopt particular fashions. There are two forces which shape managers' demand for new fashions. Socio-psychological forces operate on managers at the individual level. They produce a desire to be both individualistic and conform to prevailing norms at the same time. Thus, managers in leading organisations will be tempted to adopt new management fashions to satisfy their needs for individuality. Managers in following organisations will adopt the fashion in order to conform but the fashion will be discarded by leading organisations when it no longer satisfies managers' needs for individuality. Techno-economic forces operate externally on all organisations and will predispose managers to adopt new fashions as macro-economic conditions change.

In a later article, Abrahamson (1997) develops the role of techno-economic forces and charts the rise and fall of management 'rhetorics' since the introduction of scientific management. Commentators have identified two forms of management rhetorics (Barley & Kunda 1992). Rational rhetorics are concerned with formalising and rationalising work practices in order to optimise the efficient running of the operation. Thus, scientific management and systems approaches can be identified with rational management rhetorics. Normative rhetorics are focussed on the role of employees and maximising their contribution by harnessing their commitment to the enterprise. Thus, human relations theory and team-based approaches fall into this category. Abrahamson goes on to relate the rise and fall of rational and normative rhetorics to Kondratieff's theory of long waves of economic activity since the Industrial Revolution (Kondratieff 1935).

Long waves are 50-year cycles in the economy characterised by 25-year periods of upswing and downswing. The economy moves from the bottom of a Kondratieff downswing to an upswing as a result of technical innovations that tend to cluster around the bottom of the downswing and are then exploited in the following upswing. Abrahamson suggests that the emergence and diffusion of management rhetorics follows these upswings and downswings. Thus, rational management rhetorics seem to emerge around the bottom of the downswing periods as enterprises introduce new working practices to complement the technical innovations that are in the process of being adopted at that time. Scientific management and systems approaches both appeared around the bottom of the second and third Kondratieff in downswings in the early 1900s and late 1940s. Normative rhetorics tend to emerge at the top of the upswing periods. Abrahamson argues that this is because the lack of technical innovation in these periods compels managers to look for ways of increasing efficiency within current technical constraints. Thus, normative management rhetorics are focussed on harnessing the commitment of employees in order to improve performance. Abrahamson suggests that the contemporary emergence of BPR is an example of a rational management rhetoric emerging at the bottom of the fourth long wave in order to aid the diffusion of computer-based technologies that have the potential to improve enterprise performance.

The links between NMPs

There are considerable links between different NMPs. Certain techniques such as teamwork seem to underwrite all the NMPs (Ichniowski et al. 1996) and other NMPs work better when they are implemented together in enterprises. Thus, it is clear that experiments with quality circles in the early to mid-1980s paved the way for the introduction of TQM. The small group, off-line work that characterised quality circles is also a key guiding principle for the implementation of TQM which uses the problem-solving methods of QCs but extends and refines them and combines them with a systems-based approach to produce a more

comprehensive system of quality assurance. There is also considerable evidence for the synergies between JIT and TQM (Dean & Snell 1991; Flynn et al. 1995). The reduction of inventories and batch sizes that is characteristic of just-in-time systems (JIT) helps the implementation of TQM by exposing quality problems in the production system much earlier and thus allowing the enterprise to use TQM methods to solve these problems as they surface. Similarly, TQM reduces process times and helps to lower inventories and thus feeds into the implementation of a JIT system. Flynn, Sakakibara and Schroeder (1995) have shown that enterprises that implement both JIT and TQM together reap higher performance improvements that enterprises which implement only one or the other approach.

As noted earlier, lean production is an amalgamation of many other NMPs into a more coherent system Thus, Osterman (1994) and Cappelli and Rogovsky (1994) have shown that lean production or high performance work systems comprise the joint implementation of JIT, TQM and teamwork so that each NMP complements the other. This notion of implementing a number of NMPs together for better effect has been investigated by MacDuffie (1995) who has shown that NMPs work more effectively when they are implemented together and, in particular, when they are supported by other human resource practices. Working with the data from the MIT study of the world car industry (Womack et al. 1990), MacDuffie shows that work practices involving teamwork, problem-solving groups, employee suggestion schemes, job rotation and decentralisation of quality tasks produce the greatest impact when implemented together. MacDuffie's work practices are closely related to the NMPs of TQM and teamwork. He goes on to show that these practices work best when implemented in a JIT environment of low inventories and reduced set-up times and when they are supported by innovative human resource management practices such as more effective recruitment and selection, performance-based pay and extensive training of new and existing workers. MacDuffie uses the term 'bundles' to describe the coincident implementation of NMPs and innovative HR practices within a JIT manufacturing environment and provides the best evidence to date that NMPs work better when their considerable synergies are harnessed rather than when implemented in isolation.

The theory of the learning organisation also shares considerable common ground with the key concepts of TQM and teamwork. Kim (1993) and Senge (1990) stress the importance of shared learning in teams as a key element of building a learning organisation. Sitkin, Sutcliffe and Schroeder (1994) distinguish two forms of TQM—total quality control (TQC) and total quality learning (TQL). Whereas TQC is focussed on improving the process of the enterprise as it stands and on satisfying current customer needs, TQL is focussed on the future and on improving the processes of the enterprise and educating customers to expect more from the enterprise. Thus, TQL points clearly in the direction of the learning organisation which is constantly reviewing its operations and improving them.

BPR shares a focus on the rational–technical efficiency of the enterprise with JIT. However, BPR's prescription of reviewing and reconstituting the processes of the enterprise in order to take full advantage of the new information technology, shares considerable common ground with the notion of the learning organisation in which all aspects of the enterprise's operation and performance should be open to question and radical rethinking.

Thus, NMPs share many features in common and it is not unusual for enterprises to experience NMPs as waves of change that seem to follow in succession. Often enterprises are still in the midst of implementing one NMP when another will be adopted by the enterprise and seem to lead inexorably from it. Many enterprises report having experimented with QCs, moved on to implement TQM and/or teamwork and moved from there into the more radical prescriptions of BPR or learning organisation. The internal circumstances of individual enterprises vary considerably and managers may be attempting to achieve a number of goals in their adoption of NMP (McCabe 1996). Enterprises will often tailor the basic concepts of NMPs to their own circumstances and hence each NMP may appear in a variety of forms. Thus, the changeover between NMPs, the variety of their forms and the fact that they are often implemented simultaneously may make it difficult for enterprises and researchers alike to distinguish one NMP from another.

NMPs—autonomy or control?

A key issue in the implementation of NMPs is the extent to which NMPs are concerned with the enhancement of employee autonomy (empowerment) or the extension of managerial control over the production/service process. This reflects the debate that has been conducted

on the role of new technology in the formation of skills in enterprises. Advocates of the labour process tradition (Braverman 1974; Wilkinson 1983) argued that managers introduce technology into enterprises with the purpose of de-skilling jobs and reducing costs by using unskilled labour. More recently, post-Fordist scholars (Piore & Sable 1984; Mathews 1994) have argued that technology can be used to enhance the skill base of jobs and give employees greater autonomy in their working life and that the greatest benefits are to be reaped by enterprises that follow this path. A similar debate has taken place with regard to NMPs. Those working from a labour process tradition view NMPs as another means of extending management control on the shop floor by persuading employees to control and regulate themselves rather than imposing control upon them. Advocates of NMPs view them as a means of extending greater control to employees and improving the quality of their working life.

Advocates of NMPs have highlighted their role in the empowerment of employees (Adler & Cole 1993; Berggren et al. 1994; Mathews 1994). From this point of view, NMPs act to give greater responsibility to shop floor employees and power is decentralised from managers to lower level employees. This is a conscious strategy by managers who realise that the old Taylorist systems of work organisation lock up the knowledge and skills of employees who are encouraged not to think for themselves or take initiatives at work. But managers do not always know what is best, as the employees who work closest to the task often know how to achieve the task in more efficient ways and with higher levels of quality. Thus, NMPs such as teamwork and TQM give employees the opportunity to use the knowledge they have gained in their work and put it into the service of the enterprise. Many of the NMPs operate on the principle of unlocking the knowledge and skills of employees. Thus, TQM is premised on the principle that all employees must take responsibility for the quality of their own work and BPR goes so far as to suggest that many managers are redundant in enterprises because the employees know what needs to be done and how it should be done best.

The notion of employee empowerment reached its zenith in the new forms of work organisation pioneered by Volvo at its Kalmar and Uddevalla plants in the 1970s and 1980s (Berggren et al. 1994; Sandeberg 1995). At these plants, the traditional assembly line organisation of the car industry was abandoned in favour of 'dock assembly' carried out by fully autonomous teams of multiskilled workers. The performance of the two Volvo plants was a source of considerable debate amongst academics and the MIT team claimed that the productivity and quality levels attained under the Volvo team system were not as high and consistent as those attained under the lean production methods employed by Toyota and the US Japanese transplants. Volvo closed Uddevalla and Kalmar in 1993–94. However, the MIT team suggested that, despite the lack of autonomy of the teams under lean production, the quality of worklife for employees and the level of responsibility they enjoy are higher under lean production than in the traditional mass-production environment that prevails in much of American industry (Adler & Cole 1993).

Critics of NMPs, however, have argued that the benefits for employees of working under such systems such as TQM are illusory and that many of the NMPs can be categorised as a form of 'modified Taylorism', in which employees internalise the controls that were formerly imposed on them by management (Conti & Warner 1994). Webb (1996) has shown that TQM, a central feature of lean production systems, results in greater levels of centralised control, rather than decentralisation of power. Her study of the introduction of TQM into three organisations shows that despite the rhetoric of partnership adopted by management, the results of the introduction of TQM were a program of downsizing and the intensification of work for those left behind. For Webb, TQM and other NMPs allow managers to adopt a 'vocabulary of motive' that claims to be empowering employees whilst, in reality, extending management control and reducing the conditions enjoyed by employees:

> *In the context of takeovers, crises, refinancing operations and recession, TQM is likely to be used as the basis for renewal of management ideology: using the language of teamwork, continuous improvement and partnership, it gives senior management legitimacy for centralisation, the promotion of a unitarist view of the organisation and the representation of the intensification of work, without greater autonomy, as 'empowerment'.* (Webb 1996, p.269)

Similarly, BPR is also premised on a rhetoric, which highlights the importance of employee involvement in the process of reviewing and reorganising processes in the workplace. However, the reality of BPR implementation has often been quite different with many organisations using BPR to achieve downsizing targets and imposing the new methods in a top-down fashion (Willmott 1995). Nor have NMPs always been greeted with enthusiasm by employees. Research in the car industry in the UK has shown that employee attitudes

towards NMPs and lean production in particular is often quite negative with many reporting poor communication practices by managers involved with the NMPs and an intensification of work rather than greater autonomy and empowerment (Stewart & Garrahan 1995).

However, as with the technology–skills debate, it may be that the reality of the impact of NMPs is both empowerment for some groups but higher levels of control and work intensification for others. As Thompson and his colleagues have shown, the implementation of NMPs and their impact on skill levels and working conditions for employees varies significantly between countries and between companies. The institutional arrangements for industrial relations and training give rise to different expectations on the part of employees and managers about the best way to organise work. Similarly, the culture and histories of multinational firms that cross national boundaries can result in quite different approaches to the implementation of NMPs and the role of employees (Thompson et al. 1995).

Enterprise training and human resource management

Legge (1995, pp.76–79) has enumerated the global changes that led to the emergence of human resource management (HRM) from the old husk of personnel management in the 1980s. These included firstly, the globalisation of competition that led to the development of a more strategic approach to the management of human resources. Secondly, the example of Japanese enterprises held up in the early 1980s as exemplars for western enterprises, particularly in their management of human resources (Ouchi 1981) and finally, the growth of the 'enterprise culture' as a result of the application of neo-classical macro-economic policies that provided a benign environment for the growth of a new approach to employee relations.

A frequent distinction in the literature is made between 'soft' and 'hard' approaches to HRM (Legge 1995), or what Dyer & Kochan (1995) refer to as 'dominant models' and 'multiple models'. Dominant or soft models of HRM tend to be prescriptive and, as the epithet implies, concerned with the development of the potential of the workforce for the betterment of the enterprise and all who are connected with it. They are based, in Legge's words, on a 'developmental humanism' that stresses the generation of employee commitment through human resource policies designed to bring about trust and collaboration between employers and employees. By contrast, the multiple or hard models are concerned with the integration of human resource policies with the business strategy of the enterprise. They are based on a utilitarian instrumentalism that stresses the importance of achieving a fit between business strategy and human resource strategy. Naturally, as there are a variety of business strategies, there may also be a variety of human resource strategies which may or may not be based on trust and collaboration.

Soft models of HRM are prescriptive and find their roots in the human relations and organisational development literature that attempts to link the performance of the enterprise to the job satisfaction of its employees. As a result, soft models of HRM emphasise the importance of employee development for job satisfaction and, ultimately, employee commitment (Rainbird 1994, p.334).

Beer et al.'s (1984) map of the HRM territory cites commitment and competence as key human resource outcomes. Employee development plays a critical role in the achievement of these two outcomes:

> *After selection, employee development is one of the key methods available to corporations for ensuring the mix of skills needed to be competitive in the future. It is a form of investment that is directly related to the corporation's capacity to be flexible and adaptable to changes in its environment. In short, employee development is a key strategy for organisational survival and growth.* (Beer et al. 1984, p.86)

Walton, one of Beer's co-authors, made the goal of commitment explicit in his later typology of control and commitment models of HRM (Walton 1985). Walton described how many US enterprises were moving from an old workforce strategy based on control. This involved tightly specified job descriptions, measured work standards, hierarchical structures and adversarial labour management policies. The emerging workforce strategy was based on commitment and involved greater employee autonomy, flat structures, job security and mutuality in labour relations. Although Walton did not address the issue of training specifically, priority for training and retaining the existing workforce was a key element in employment assurances that helped to build the commitment strategy. Guest, in his theory of HRM (1987) elaborated on the Harvard model for Britain. In this theory, Guest proposes that

groups of HRM policies will lead to human resource outcomes that improve the performance of the enterprise. Training is quite clearly linked to adaptability/flexibility and commitment following Beer's description of the aims of employee development.

There are a number of other models in the 'soft HRM' tradition (Lawler 1986; Pfeffer 1994; Kochan & Osterman 1994). As Dyer and Kochan (1995) have observed, these models share a number of common characteristics:

> *... high levels of employee participation, involvement or empowerment at the workplace level, primarily through enriched jobs and/or self-managed work teams; high selection standards; extensive investments in training and development; opportunities for high levels of earnings through skills-based and/or performance-based schemes; free flow of information up as well as down the organisation, and stability of employment. All also emphasise the need for mutual trust and co-operation through the organisation.* (p.143)

Although these models may differ in terms of emphases placed on particular aspects, they all highlight the importance of employee development and within that overall umbrella, the importance of training to the process of development.

Hard or strategic models of HRM focus on the connection between business strategy and HRM. They are descriptive in character. Unlike the prescriptive approach of the soft models, strategic models of HRM are contingent, linking a variety of potential HRM strategies to the possible business strategies of the enterprise (Dyer & Kochan 1995). From the strategic perspective, employee development is concerned with the development of competencies to enhance the performance of enterprises.

The link between HRM and performance forms the core of the original strategic model of HRM devised by Fombrun, Tichy and Devanna (1984). This model identifies four aspects of HRM—selection, rewards, appraisal and development. Furthermore, the link to performance in the Fombrun model ensures that development is concerned quite narrowly with 'ensur[ing] that individuals are properly equipped with the skills and knowledge to carry out their jobs ...' (Fombrun et al. 1984, p.49). The broader aspects of employee development of the Harvard model are not present in Fombrun's strategic model of HRM. Legge (1995) distinguishes between matching models and resource-based models of strategic HRM.

Under the matching models approach to strategic HRM, enterprises provide training to improve performance. Because training is strategic, it should be focussed on management development since managers are the key players in the strategy formulation and implementation process. However, the content and delivery of training will change as the circumstances of the enterprise change. Nevertheless, training should always be part of an internally consistent set of human resource practices supporting the strategic direction of the enterprise.

More recently, the resource-based view of the enterprise has shed a different light on the role of HRM and its relationship to strategy. The resource-based view of the enterprise has been popularised in recent years by the work of Hamel and Prahalad who have developed the notion of 'core competencies'. Core competencies are learned attributes in the enterprise that give it long-run competitive advantage over its rivals. As Hamel and Prahalad argue (1990), core competencies are not always visible to observers who focus on the end products or the capabilities of the enterprise. Core competencies are buried deep in the enterprise and are only developed over a long period of time.

Wright and McMahan (1992) argue that human resources can add significantly to the performance advantage of the enterprise and that specific skills may be rare in the population. Moreover, the investment of an enterprise in building a stock of skills will not be easily imitable by rivals and skills may be such that they cannot easily be replaced by technology. If these conditions are met, then human resources will be a source of resource-based, sustained competitive advantage to the enterprise. In the resource-based view of the enterprise, the process of training and development becomes crucial. Human resources are a major core competency for enterprises. They yield a potentially inimitable source of competitive advantage for enterprises. However, the potential of human resources may remain unrealised if enterprises do not have the processes that will enable them to release that potential. In the resource-based view of the enterprise, training is a means of both creating and realising the competitive advantage that human resources can yield.

New management practices and training

The introduction of NMPs has significant implications for training. Research in Australia has shown that in 1994–95, quality improvement was the single most important factor driving training provision at the enterprise level (Smith & Hayton 1999). The ABS Training Practices survey (ABS 1997b) has also confirmed that the introduction of workplace change and the restructuring of work organisations are key factors reported by firms for increasing their level of training provision. However, the nature of the training provision may be quite different for each of the different NMPs examined in this review.

TQM

Training has a significant part to play in the introduction of TQM (Smith 1997). Typically a TQM program is introduced from the top of the enterprise and cascades through all its levels. At every level teams are formed to analyse each department's activities. Each team requires training in group processes and the statistical process control methods that are used to collect and analyse performance data. Often this involves training programs running continuously over periods of years in the case of large enterprises. The size of such a training task inevitably involves the use of non-training specialists in a training role. As a result, trainer–training programs become an immediate priority for enterprises introducing TQM. Beyond the collection and analysis of data, those involved in TQM are most frequently trained in behavioural skills such as communication, teamwork and, in service industries, customer service (Smith & Hayton 1999). Thus the introduction of TQM often involves a heavy and prolonged investment in training from enterprises (Osterman 1995). The implementation of TQM has often been the catalyst for organisations to move away from simple technical training to training in behavioural skills which is one of the key features of training for NMPs (Osterman 1994).

Teamwork

Implementation of all variants of teamwork involves considerable training input. Teamworkers need to be extensively trained to cover jobs other than their own and, in the case of the more autonomous teams, to take on more highly skilled tasks. Team leaders and supervisors need to be trained in their new roles as facilitators to the teams. Banker et al.'s (1996) research has shown that training is a key ingredient for the success and longevity of teams. Teams that do not undergo extensive training tend not to work well and to disintegrate in a short period of time.

Lean production/high performance work organisation

The research of Cappelli and Rogovsky (1994), Osterman (1995), Snell and Dean (1992) and others has shown that the adoption of high performance working practices involves an increased commitment to training from organisations. Osterman showed that the adoption if JIT, teamwork and TQM as a group of working practices associated with the high performance work organisation, resulted in more extensive training for employees at all levels in organisations. These practices require new sets of skills and these were primarily behavioural. Similarly, MacDuffie and Kochan (1995), working with the MIT data, showed that car plants that adopted lean production trained more than traditional mass production plants. Studies in Europe have confirmed the extent of training under lean production (Kabst et al. 1996). Unfortunately, although these studies confirm the impact of NMPs on the volume of training, they do not investigate the type of training that takes place, other than the emphasis on behavioural skills uncovered by Osterman's work.

BPR

BPR can be classified as a rational NMP (Abrahamson 1997). The focus of BPR is on the review and restructuring of processes within the organisation. Presumably, training would be part of the adoption of new processes, but there is little in the existing literature to suggest the nature and extent of training that accompanies BPR.

Learning organisation

The focus of the learning organisation is on opportunities for individual learning that can be captured by the enterprise rather than on training. Thus, the literature on the learning organisation highlights the importance of informal and incidental learning in the workplace (Marsick & Watkins 1990). Much learning takes place incidentally whilst working. However, work can be structured so that the learning takes place more systematically and can be captured by the organisation. This is informal learning—it takes place outside the training system but is still consciously structured by the organisation to enhance employee learning and organisational performance. Thus, the training that occurs within the learning organisation is more likely to be workplace-based, informal and on the job and concerned with helping individuals structure their own learning experiences rather than impart certain pre-determined skills.

Conclusion: The role of training

Training is a key element in the implementation of all the NMPs examined in this review. Despite the differences in approach and philosophy between NMPs a number of conclusions can be drawn about the role of training generally in the new management practices.

There is a move from technical skills to behavioural skills. In all the NMPs examined in this review, the demand for skills is changing from technical, job-specific skills to behavioural skills. Osterman (1995) and Cappelli and Rogovsky (1994) have shown that the implementation of high performance and lean production organisations is associated with extensive training in problem solving and team working skills. In Australia, the Industry Training Studies project (Smith & Hayton 1999) discovered that employers were demanding training that influenced the attitudes and behaviour of their employees and that traditional, technical skills training was being outsourced to equipment vendors as new methods of management were introduced as a result of the impact of the quality movement.

The emerging emphasis on behavioural skills has also been explained as a means of gaining employee compliance to the introduction of NMPs. Heyes (1996) has shown how the emphasis on behavioural skills training was necessary to the introduction of TQM in a chemicals firm in the UK. Although employees were trained in the technical skills of quality data collection and analysis, their willingness to use their knowledge gained at work for the benefit of the organisation could only be secured by generating enthusiasm and commitment to the organisation. Thus, behavioural skills training in this organisation helped to change employee attitudes and gain their commitment to deploy their skills. As a result, there appears to be a strong element of repetition amongst the training programs associated with different NMPs.

Training is part of a 'bundle' of supportive HR practices. The work of MacDuffie and others (MacDuffie 1995; MacDuffie & Kochan 1995; Dyer & Reeves 1995) has shown that the successful implementation of many NMPs associated with lean production and the high performance organisation depends on the parallel introduction of a range of supportive HR practices. Training appears as a significant element in all the 'bundles' of HR practices identified in these studies. Thus, training is not a sole factor operating in isolation to facilitate the introduction of NMPs. The success of NMP implementation depends upon a range of factors, not only the training that is implemented as part of the new program. Training needs to be part of a range of HR practices such as new forms of remuneration and employee selection. These HR practices should display a high level of internal 'fit' so that they work together to aid the implementation of NMPs (Dyer & Reeves 1995).

Training is implemented from the top down. The introduction of NMPs most often takes place from the top down in organisations. Decisions to implement NMPs are usually taken at senior levels in organisations and are imposed on the rest of the organisation. Training for the introduction of NMPs also typically follows a top down pattern. This 'cascade' approach to training for NMPs can, perhaps, be best seen in the implementation of TQM. Here training for the new quality practices is implemented first with the top team of the enterprise and then the same principles are embodied in training programs that work their way down through the organisational hierarchy.

Training for NMPs is a strong driver of enterprise training. The Industry Training Studies research showed that the most important driver of enterprise training was the implementation of workplace change (Smith & Hayton 1999). Foremost amongst the programs of organisational change that were driving enterprise training at the time of the research was the implementation of quality programs. These results have been confirmed by ABS in the survey of employer training practices (ABS 1994; 1997b). The ABS results show that, after the impact of technological change, the most important factors causing organisations to increase their training expenditure were changes to management practices and the need for improvement in quality.

Training for NMPs is usually sourced internally. Although consultants and other organisations play a role in the diffusion and implementation of NMPs (Abrahamson 1996), much of the training for NMPs is carried out in-house using the enterprise's own training staff or staff trained as trainers. Very little of the training for NMPs is sourced to external training providers. Often the training that is provided is short and sharp and focussed on the job. It is much less expensive for training to be provided by the enterprise rather than sourced to external training providers. This has significant implications for the training market.

To summarise, training is a critical element in the introduction of NMPs into enterprises. Although the role of training has been acknowledged in the many studies of NMPs that have taken place in recent years, training has rarely been the focus of research. There is a need to understand clearly the role of training shaping the ability of enterprises to undertake successful organisational change.

2 Survey method and sample

The sampling frame employed for this study was derived from the Dun and Bradstreet database of Australian organisations, as of July 1998. The Dun and Bradstreet database includes approximately 161 000 entries of Australian private sector enterprises. Each entry includes basic demographic information about the enterprise including contact details, description of the basic business, ANZSIC classification and some basic data referring to size and annual turnover. The database also includes information on the key management positions in the enterprise and can be easily stratified on this basis. The specific sampling frame used in this study relates to the database of identified human resource (HR) managers. This sampling frame was chosen because HR managers are well positioned to make informed comment upon both new management practices and training expenditure and practices. However, because specialist HR managers are a feature of larger rather than smaller enterprises, the sampling frame disproportionately focusses upon larger organisations. Nevertheless, this oversampling of larger enterprises suits the purpose of the study as larger organisations are more likely to have implemented new management practices (ACIRRT 1999).

The survey instrument was piloted in June 1998 with a group of HR managers drawn from 12 private sector enterprises covering the manufacturing, retail and finance sectors. The informants in each enterprise filled in and returned the instrument and were subsequently interviewed by members of the research team via telephone. The feedback thus obtained resulted in some minor but important changes to the final instrument.

The survey was distributed to 3415 HR managers in August 1998. This represents the full HR manager stratification of the Dun and Bradstreet database at the time. The survey questionnaire is reprinted in appendix A.

In an effort to improve the overall response rate and to gauge the likely presence of non-response bias, two mail-outs were conducted. The second mail-out commenced three weeks after the first mail-out. Table 1 summarises the size of the sampling frame and the number of responses. Invalid returns include those returned to sender and questionnaires not completed due to company policy. Overall, the effective sampling frame consists of 3241 organisations from which 584 useable responses were gained; this translates to an effective response rate of 18.0%. In analysing models, all missing data were treated as missing, as a consequence different models using different variables are based on varying numbers of observations. The number of employed cases for a model depends upon the availability of complete data.

Table 1: Sampling frame and responses

Mail-out	Surveys posted	Invalid returns	Responses
1	3415	102	326
2	3313	72	258

As a check for likely non-response bias, independent sample t-tests for differences in the means between responses from the first and second mail-outs were conducted. It is postulated that the respondents to the second mail-out are relatively disinterested and require prompting from an additional stimulus, and therefore are similar in nature to non-respondents (see Armstrong & Overton 1977). Only five of the 158 questions measured on the quantitative (1–7) scale indicated significant mean response differences between the two mail-outs. This represents only 3.2% of all questions and provides at least some evidence that the sample appears to be relatively free from non-response bias.

Questionnaire

In general, the survey examines the hypothesis that training practices depend upon the following factors: new management practices, human resource practices, the business and training environment, and the nature of the organisation. To facilitate the reliable and valid measurement of various concepts numerous multi-item measurement scales are employed. These scales are derived from previous studies and/or developed from related literature and suitably adapted. The questionnaire consists of six sections covering:

1 Management practices and philosophies
2 Work teams
3 Human resource practices
4 Business environment
5 Training practices and environment
6 Nature of the organisation

Measurement scales for explanatory variables for enterprise training

The explanatory variables used to explain enterprise training practices fall under six groupings:

1 *Management practices and philosophies*. These represent the major independent variables in the study. A number of multi-item scales were deployed to measure the presence of the four major new management practices identified in the study. These were:
   - The learning organisation. The use of a learning organisation philosophy was measured using a ten-item scale developed by Sinkula, Baker and Noordewier (1997) that measures the extent of the learning orientation of the enterprise. This scale measures the learning orientation of an enterprise and is used in this study as a proxy for learning organisation.
   - Total quality management. The presence of a TQM philosophy was measured using a scale adapted from the work of Snell and Dean (1992) and Flynn, Sakakibara and Schroeder (1995). The original scales in this study referred to a manufacturing environment. Thus the scales were adapted to reflect TQM practices in a variety of organisational contexts.
   - Lean production. The extent of the adoption of lean production techniques was measured using a ten-item scale based on the work of Youndt, Snell, Dean and Lepak (1996). Again, this scale was devised for use in a manufacturing environment and was thus adapted for general use in this survey.
   - Business process re-engineering. The relative newness of this management practice means that few reliable scales have been developed in the literature, which can be used to measure the presence or absence of BPR. In this case a seven-item scale was developed for the survey by the research team.
2 *Work teams*. Both the extent and level of autonomy granted to work teams was measured in the survey using a ten-item scale—a single item measuring the percentage of the workforce involved in teams and nine items measuring the extent of autonomy. The development of this scale was guided by the work of the MIT International Motor Vehicle Project which investigated the adoption of teamworking in the worldwide automotive industry as part of a study of state of the industry in the late 1980s (Womack et al. 1990)
3 *Human resource practices*. Ten items measured the role and nature of human resource practices in the enterprise. Broadly, we refined these items into four key HR issues for this study:
   - Human resource strategy. The integration of HR practices with the business strategy of the enterprise.
   - Human resource performance. The extent of the use of 'core competencies' in defining the performance of employees through a performance management system.
   - Hire skill. The extent to which the enterprise recruited employees with high levels of pre-existing skills.

- Responsibility for personal well being. The extent to which the enterprise assumes some responsibility for the welfare of its employees. This measure was found to be a particularly important predictor of the extent of training provision in US enterprises (Osterman 1995).

4 *Business environment.* This 15-item scale was developed by Naver and Slater (1990) in order to measure the turbulence of the competitive environment for business. The scale measures three elements of competitiveness—market turbulence, technological change and the competitive intensity of the industry.

5 *Training practices and environment.* Four items in the survey examined contextual issues for training in the enterprise including the extent of the integration of training with the business strategy of the enterprise, the levels of skill in the existing workforce and the transferability of skills to other enterprises.

6 *Nature of the organisation.* These items record some basic demographic data about the enterprise including size, extent of unionisation, composition of the workforce, ownership structures and industry sectors.

The measures for the explanatory variables for enterprise training are summarised in table 2. Further details on the statistical properties of these measures are provided in appendix B.

Table 2: Measures of explanatory variables for training

Explanatory variable measures	Label	Item(s)	No.
New management practices			
Learning orientation	LO	MPP1–6,8–11.	10
Total quality management	TQM	MPP13–15,18–21	7
Lean production	LP	MPP22–25,28–33	10
Business process re-engineering	BPR	MPP34–37,40,42–43	7
Work-team autonomy	WA	WT10–16,18,19	9
Percentage of teams in workforce	TEAMS	WT1	1
Human resource practices			
Human resource strategy	HRS	HRP1,2	2
Human resource performance	HRP	HRP7,8	2
Hire skill	HIRE	HRP5	1
Responsible for personal well-being	VALUES	HRP9	1
Training environment			
Training linked to business strategy	TBS	TPE5,7r,10	3
Difficult to use skills elsewhere	SPECIFIC	TPE8	1
Workers are highly skilled	SKLEV	TPE9	1
Business environment			
Market turbulence	MT	BE1–4	4
Competitive intensity	CI	BE6–10	5
Technological turbulence	TT	BE12–14,15r	4
Nature of organisation			
Numbers of employees	SIZE	NOO2	1
Percentage of unionisation	UNION	NOO4	1
Australian national	NAT	NOO17	1
Privately owned	PRIVAT	NOO18	1

r = denotes reverse coded

Measurement scales for training practices and explanatory factors

To provide a comprehensive analysis of training practices 16 measures of training activities were examined. Three broad types of measures were examined.

Five measures representing single item 'hard quantitative' measures of the level of training activity were examined. These measures covered the percentage of payroll spent by the enterprise in the current year (1997–98) and the previous year (1996–97), the percentage of employees involved in training in 1998, the percentage of training devoted to managers in the enterprise and the percentage of training devoted to full-time employees.

Seven multi-item scales based on the *perceptions* of respondents (measured on a 1–7 scale) about various training activities. The seven constructs of types of training derived from this data included:

1 The reliance of the enterprise of external training including training from TAFE colleges, private training providers, universities, industry associations, equipment vendors and the use of external short training courses.

2 *Engagement with the VET sector*. This was defined as the use of enterprise or national competency standards for training in the enterprise, the accreditation of enterprise training by State or national training authorities and the use of training provided by TAFE colleges.

3 *The formalisation of enterprise training*. This measured the extent to which training was formalised through the use of formal training needs analysis processes and the use of formal and off-the-job training activities for different occupational groups in the workforce.

4 *Behavioural skills focus*. The extent to which enterprise training focussed on training concerned with the development of teamwork, personal skills, communication and problem solving skills.

5 *Workplace delivery*. The extent to which training was delivered in the workplace, particularly for blue-collar employees.

6 *Coaching/mentoring*. The extent of the use of coaching and mentoring approaches to training.

7 *Decentralisation*. The extent to which responsibility for training was devolved to line managers in the enterprise.

Four dichotomous single-item questions related to the existence or otherwise of a training practice or environment. These measures established the existence or not of a written training plan, a specialist training department, a training manager and the use of workplace trainers/instructors.

The precise training measures are provided in table 3. Further details on the statistical properties of these measures are provided in appendix B.

Profile of respondents

Tables 4 and 5 present frequency percentages to describe the type of organisations which responded to the questionnaire. Table 4 reflects the impact of the use of the HR manager stratification of the Dun and Bradstreet database. Note the domination of large to medium-sized, Australian national, privately owned organisations in the sample. Table 5 indicates that respondents come from a non-dominated cross-section of different industry types.

Table 3: Measures of training practices and activities

Training measures	Label	Item(s)	No.
Quantitative percentage measures			
Percentage of payroll devoted to training in 1996–97	PAY97	TPE61	1
Percentage of payroll devoted to training in 1997–98	PAY98	TPE62	1
Percentage of employees involved in training	EMPLOY	TPE63	1
Percentage of training devoted to managers	MGERS	TPE13	1
Percentage of training devoted to full-time employees	F/T	TPE16	1
Multi-item perception measures			
Reliance on external training	EXT	TPE21,22,23,25	4
Engagement with VET sector	VET	TPE20,45,46,47	4
Formalised training activities	FORM	TPE11,26,27,29,31,34,47	7
Behavioural skills focus	BEHAVE	TPE35,36,37,38,41,42	6
Workplace delivery	WORK	TPE32,33,48	3
Coaching and/or mentoring	COACH	TPE28,30,50	3
Decentralisation	DECENT	TPE48,49r,52	3
Dichotomous measures			
Existence of a written training plan	PLAN	TPE53	1
Existence of a specialist training department	DEPT	TPE56	1
Existence of a training manager	TMGER	TPE57	1
Existence of workplace trainers/instructors	INSTR	TPE58	1

r = denotes reverse coded

Table 4: Respondents by employee size and ownership type

No. of employees	*Percentage frequency*	Ownership location	*Percentage frequency*	Ownership nature	*Percentage frequency*
Small ($n < 20$)	*16.4*	Australian national	*66.1*	Privately owned	*62.9*
Medium ($20 \leq n \leq 99$)	*36.5*	Australian-based multinational	*7.8*	Publicly listed	*21.3*
Large ($99 < n$)	*47.1*	Foreign-based multinational	*26.1*	Other	*15.8*

Table 5: Respondents by industry type

Industry type	*Percentage frequency*	Industry type	*Percentage frequency*
Food & beverage manufacturing	*5.0*	Mining	*2.4*
Machinery & equipment manufacturing	*6.0*	Other manufacturing	*18.5*
Construction	*6.6*	Wholesale trade	*9.7*
Finance & insurance	*8.1*	Transport & storage	*2.8*
Retail trade	*5.5*	Property & business services	*4.5*
Agriculture, forestry & fishing	*1.9*	Other	*29.0*

3 Preliminary analysis of training practices

In this chapter a preliminary analysis of the key data on training practices is undertaken. Descriptive statistics are provided on training measures and associated explanatory factors. This information serves as an important precursor to the development of models of training activity.

Quantitative measures of training

Table 6 provides a frequency distribution of data pertaining to the percentage of payroll devoted to training. For 1996–97 the responding enterprises spent on average 4.96% of their payroll on training activities. In 1997–98 this figure decreases to 4.34%. These figures compare to an average of 2.54% from the ABS Training Expenditure Survey (ABS 1997a), 3.18% for large organisations. Thus on average, slightly less was spent by the enterprises on training in 1997–98 compared to the previous year. For both years the greatest frequency occurs with the range 1% to 2%. For both years more than half the enterprises devoted between 0% and 3% of their payroll on training. For both 1996–97 and 1997–98, only 3.1% of organisations devoted no resources to training. Overall, the levels of expenditure are remarkably consistent over the two years.

Table 6: Percentage of payroll spent on training

Payroll %	96–97 (% of organisations) PAY97	97–98 (% of organisations) PAY98
$0.00 < X \leq 1.00$	23.3	19.8
$1.00 < X \leq 2.00$	23.3	23.1
$2.00 < X \leq 3.00$	11.8	12.3
$3.00 < X \leq 4.00$	4.2	5.7
$4.00 < X \leq 5.00$	20.4	17.9
$5.00 < X \leq 10.00$	13.2	15.1
$10.00 < X \leq 100.0$	3.8	6.1

Table 7 provides frequency distributions for information on the training provided to all employees (EMPLOY), to managers (MGERS) and to full-time employees (F/T). The summary statistics are: EMPLOY (mean = 53.1%), that is, on average 53% of employees received training; MGERS (mean = 24.1%); that is, on average 24% of all training resources are devoted to managers; F/T (mean = 78.6%), that is, on average 79% of all training resources are devoted to full-time staff. For EMPLOY the distribution is uniformly spread across all percentages. For MGERS the greatest frequency is between 0% and 10% of training resources are devoted to managers, and that for more than 78% of organisations between 0% and 30% of training resources are devoted to managers. For F/T the greatest frequency is between 90% and 100% of training resources devoted to full-time staff, and that for 60% of organisations more than 70% of training resources are devoted to full-time staff. For 2.2% of organisations no employees receive training. For 2.9% of organisations no training resources are devoted to managers. While for 1.8% of organisations no training resources are devoted to full-time staff.

In summary, therefore, training provided to employees is fairly normally distributed through the responding enterprises with about 53% of employees receiving training from their employers. However, the resources devoted to the training of managers and full-time employees are not normally distributed with most enterprises responding that they devote

30% or less of their training resources to training managers and most enterprises indicating that they devote 70% or more of their resources to the training of full-time employees. Thus, managers and full-time employees receive more training than their numbers in the workforce would suggest.

Table 7: Employees and training

% of employees or managers or full-time	% of organisations for (EMPLOY)	% of organisations for (MGERS)	% of organisations for (F/T)
$0.00 < X \leq 10.0$	16.2	32.2	3.7
$10.0 < X \leq 20.0$	9.1	24.8	0.8
$20.0 < X \leq 30.0$	9.5	21.4	2.3
$30.0 < X \leq 40.0$	6.2	9.0	3.3
$40.0 < X \leq 50.0$	10.4	7.1	6.5
$50.0 < X \leq 60.0$	8.9	2.0	4.5
$60.0 < X \leq 70.0$	5.1	0.9	8.3
$70.0 < X \leq 80.0$	11.5	1.8	16.0
$80.0 < X \leq 90.0$	8.0	0.0	17.4
$90.0 < X \leq 100.0$	15.1	0.8	37.2

Perceptions of training activities in the enterprises

In describing the multi-item perception measures of training summated scales (re-scaled to 1–7, that is, adding up all items and dividing by the number of items) are employed. On this scale the mid-point of 4.00 measures moderate extent, 1.00 measures not at all, and 7.00 measures great extent. These scales can also be employed to classify organisations into low (1.0 to less than 3.0), medium (3.0 to 5.0) and high (more than 5.0 to 7.0) groupings. These groupings are also used below to describe the data.

Figure 4 presents a frequency distribution for reliance on external training. The mean for EXT is 3.60. Therefore, on average, the reliance on external training of the enterprises in the sample is slightly less than moderate. The distribution is reasonably symmetric around its mean except for a slightly higher peak at the not at all score of 1.0. Thus, nearly 70% of enterprises in the sample have a moderate reliance on external training and less than 10% have a high reliance.

Figure 4: Reliance on external training

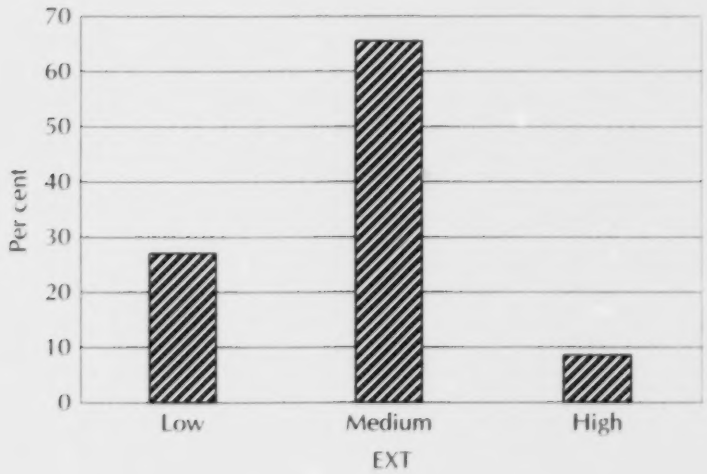


Figure 5 presents a frequency distribution for engagement with the VET sector. The mean for VET is 3.44. Therefore, on average the engagement with the VET sector is less than a moderate extent. The distribution appears to be reasonably uniform from 1.0 to 5.5, while a significant fall in the frequency occurs for 5.5 to 7.0. This figure shows that, despite eight years of training reform, nearly 40% of enterprises in the sample have only a low engagement with the VET sector through the use of competency standards for training and accredited training.

Figure 5: Engagement with the VET sector

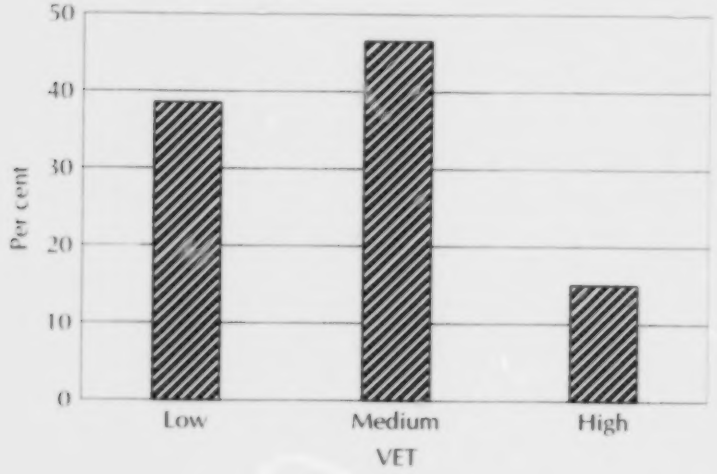


Figure 6 presents a frequency distribution for the use of formalised training activities. The mean for FORM is 4.07. Therefore, on average organisations use formalised training to a moderate extent. The distribution appears to be reasonably symmetric around its mean. This figure supports evidence from other Australian sources such as the Training Practices Survey (ABS 1997b) that the use of formalised training practices are reasonably well established in the enterprises in the sample.

Figure 6: Formalisation of training

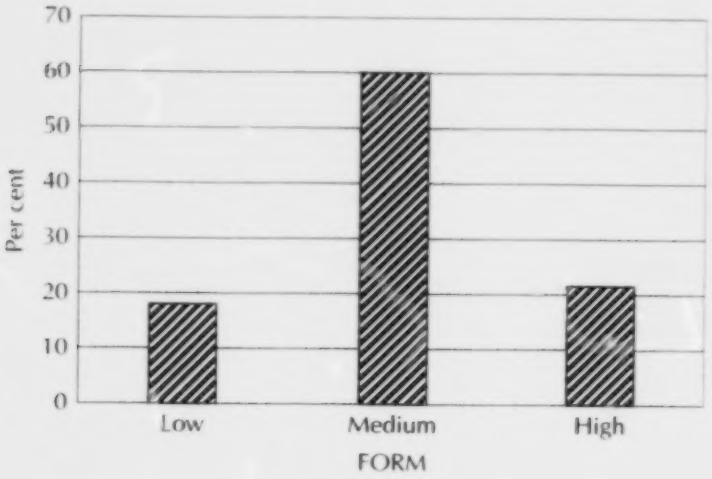


Figure 7 presents a frequency distribution for a behavioural skills focus. The mean for BEHAVE is 4.54. Therefore, on average a behavioural skills focus occurs at a greater than moderate extent for organisations. The distribution is reasonably positively skewed. The two extremes of 1.0 and 7.0 have relatively high peaks. This finding supports conclusions from

Australian research (Smith & Hayton 1999) and the USA (Osterman 1995) that behavioural skills training has become an important focus for enterprises in their training provision.

Figure 7: Focus on behavioural skills

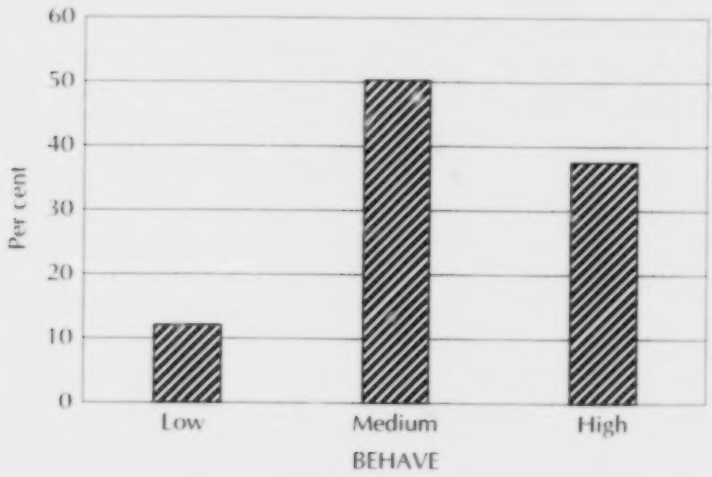


Figure 8 presents a frequency distribution for workplace delivery. The mean for WORK is 4.47. Therefore, on average workplace delivery occurs at a greater than moderate extent for organisations. The distribution is clearly positively skewed, with a long tail at the 'not at all' end of the distribution. Thus, the sample supports the view that the workplace delivery of training is increasingly important to enterprises (Raper et al. 1997).

Figure 8: Workplace delivery of training

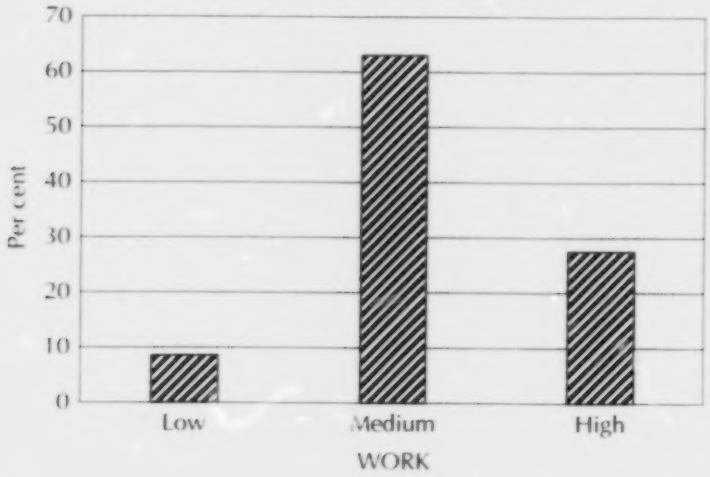


Figure 9 presents a frequency distribution for coaching and/or mentoring. The mean for COACH is 3.69. Therefore, on average the use of coaching and/or mentoring is slightly less than a moderate extent for organisations. The distribution appears to be reasonably uniform from 1.0 to 6.0. This data suggests that, despite the emphasis on workplace delivery of enterprise training noted above, the use of coaching and mentoring as a delivery mechanism has yet to be fully exploited by the enterprises in the sample.

Figure 9: Coaching and mentoring

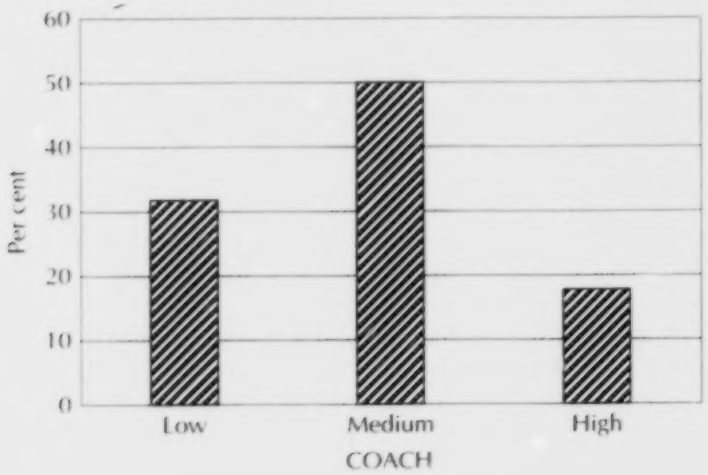
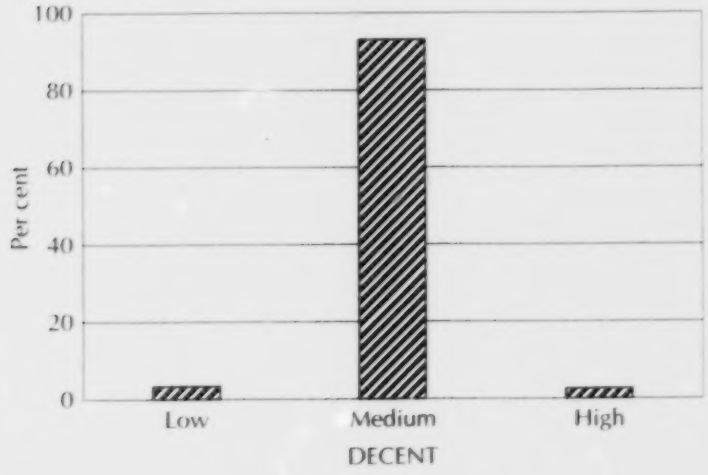


Figure 10 presents a frequency distribution for decentralisation. The mean for DECENT is 4.12. Therefore, on average, decentralisation takes place to a moderate extent for enterprises. The distribution appears to be reasonably symmetric around its mean but with a smaller spread than other distributions. The tails of the distribution are significantly smaller for DECENT. This distribution suggests that line managers in these enterprises have accepted a moderate degree of responsibility for training but that this has yet to be decentralised to the extent that specialist training staff are no longer relevant to the enterprise.

Figure 10: Decentralisation of responsibility for training



Dichotomous measures of training activity

Table 8 provides data on the enterprises measures of training activities. In summary, slightly less than half of enterprises have written training plans and training managers while most enterprises do not have specialist training departments but do have workplace instructors.

Table 8: Dichotomous measures of training

	PLAN	DEPT	TMGER	ISTR
Yes	45.2	21.3	42.1	61.9
No	54.6	78.7	57.7	37.6

However, as other studies have shown (ABS 1997a; 1997b), the existence of training infrastructure is particularly affected by the size of the enterprise. Table 9 summarises this information by size of enterprise.

Table 9: Dichotomous measures of training by size of enterprise

	PLAN	DEPT	TMGER	ISTR
Small	30.1	7.5	32.3	47.3
Medium	34.8	9.3	30.9	52.0
Large	58.6	35.5	54.1	74.7

Thus, the incidence of the existence of training plans in the enterprises is significantly higher for larger enterprises. The existence of specialist training departments is largely confined to the large enterprises with only 9.3% of even medium-sized enterprises reporting their existence. Interestingly, the incidence of specialist training managers is significantly higher than the incidence of training departments with over 30% of small enterprises reporting the existence of a training manager and slightly fewer medium-sized enterprises. Thus, many training managers appear to be sole agents without the support of training departments. The place of workplace trainers/instructors appears to have become well entrenched in many Australian enterprises with nearly half the small enterprises reporting their existence and almost three-quarters of large enterprises.

Summary

The preliminary analysis of the data on training practices allows a number of clear conclusions to be drawn about the nature and extent of training in the sample enterprises.

- Between 1997 and 1998, the percentage of payroll spent on training by the sample enterprises has declined from approximately 5% to 4.3%. The level of expenditure reflects the preponderance of medium- and large-sized enterprises in the sample frame.
- The incidence of training for all employees is fairly normally distributed but the enterprises in the sample tend to focus their training resources on management training and on training for full-time staff.
- In general, the sample enterprises do not rely heavily on external training nor are they highly engaged with the VET sector.
- Training has become quite formalised in the enterprises—but this does not imply the widespread use of competency standards for devising training or the widespread accreditation of enterprise training. The formalisation of training is reflected in the relatively high incidence of written training plans, even in small- to medium-sized enterprises.
- The enterprises are increasingly focussing on behavioural skills training for their staff.
- Training is primarily delivered in the workplace but the use of coaching and mentoring as delivery mechanisms has yet to become widely adopted. The use of workplace instructors/trainers to facilitate the workplace delivery of training has become quite widespread.
- Line managers have accepted a moderate degree of responsibility for training but decentralisation of these responsibilities has not progressed to the point where specialist training managers and, to a lesser extent, training departments, have been eliminated from the sample enterprises.

4 Preliminary analysis of explanatory training factors

This chapter presents a preliminary analysis of the explanatory factors for training in this study including:

- learning orientation (used as a proxy for learning organisation)
- total quality management
- lean production
- business process re-engineering
- work teams
- human resource strategy
- human resource performance
- training linked to business strategy

Again, for multi-item scales, re-scaled summated scales are employed for description purposes. For these scales the mid-point of 4.00 is indifferent, 1.00 measures strongly disagree, and 7.00 strongly agree. These scales can also be employed to classify organisations into low (1.0 to less than 3.0), medium (3.0 to 5.0) and high (more than 5.0 to 7.0) groupings. These groupings are also used below to describe the data.

The following figures present bar charts of the frequency distributions for the explanatory training factors. Full tables showing breakdowns of this data by enterprise size and industry type are given in appendix D.

Figure 11 presents the frequency distribution for learning orientation. The figure shows that the sample enterprises are quite committed to the notion of the learning organisation (mean = 4.72) with 40.2% recording a high commitment to learning orientation. The figures in appendix D show that learning orientation is more common in small- to medium-sized enterprises (54.8% high commitment in small enterprises) and in manufacturing, retail and business services.

Figure 11: Learning orientation

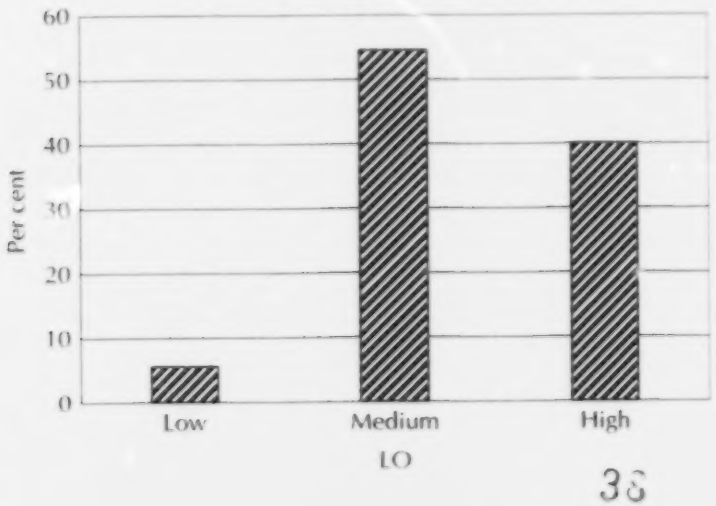


Figure 12 presents the frequency distribution for TQM. The figure shows that the sample enterprises are quite committed to the notion of TQM (mean = 4.80) with 43.7% recording a high commitment to TQM. The figures in appendix D show that learning orientation is more common in small- to medium-sized enterprises (59.8% high commitment in small enterprises) and in manufacturing, retail and construction.

Figure 12: Total quality management

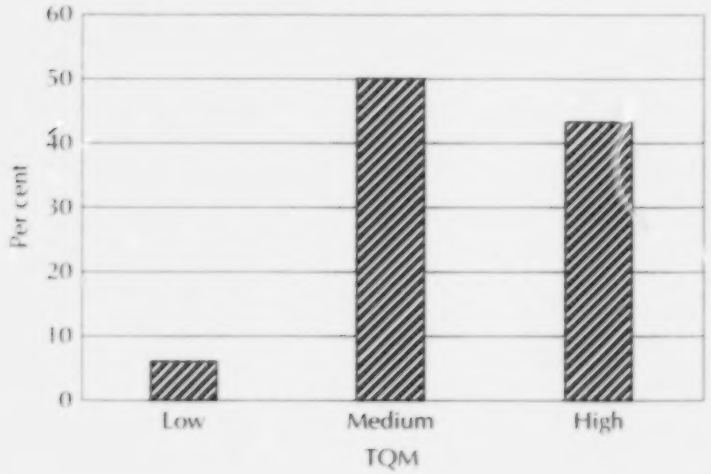


Figure 13 presents the frequency distribution for lean production. The figure shows that, like learning orientation and TQM, the sample enterprises are quite committed to the notion of the lean production (mean = 4.85) with 44.5% recording a high commitment to lean production. The figures in appendix D show that lean production is more common in small- to medium-sized enterprises (54.8% high commitment in small enterprises) and in manufacturing, retail and construction.

Figure 13: Lean production

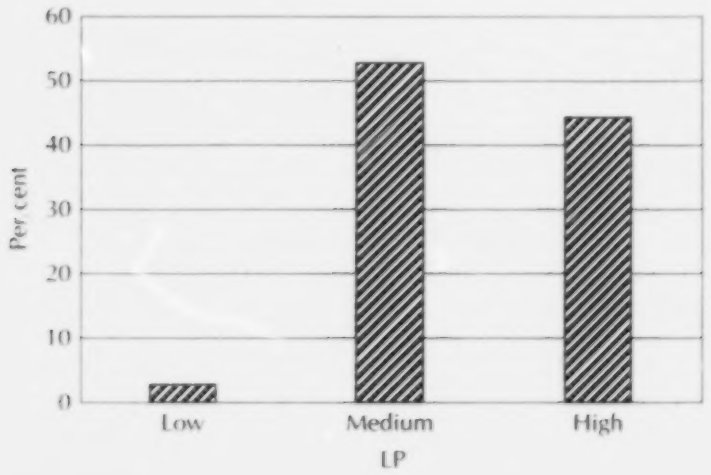


Figure 14 presents a frequency distribution for business process re-engineering. This distribution is much more normal than those for learning orientation, TQM and lean production. It suggests that enterprises are less committed to the use of re-engineering methods than the previous three management practices (28.3% high commitment). The mean for BPR is 4.44 and the distribution is reasonably uniform for 3.0 to 5.7, outside this range the frequency drops off significantly. The figures in appendix D show BPR is more evenly distributed by size and industry type than the previous NMPs.

Figure 14: Business process re-engineering

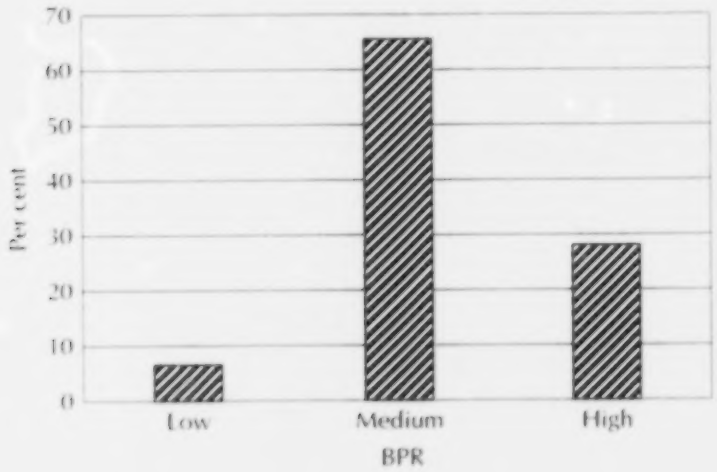
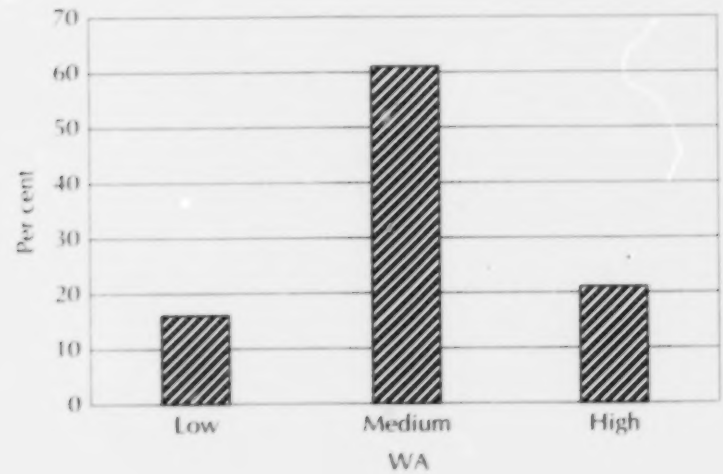


Figure 15 presents a frequency distribution for work team autonomy, these figures relate only to those enterprises that employ work teams. Approximately 37% of enterprises did not employ work teams. While of those enterprises that did employ teams, on average 72% of employees work in teams. This is a very high figure, suggesting that in those enterprises where teamwork has become established, the majority of employees will be involved. Using data from all enterprises, on average 46% of employees work in teams. The figures in appendix D show that in small- to medium-sized enterprises, more employees are typically involved in the teams and that high levels of involvement are concentrated in the construction, finance and business services sectors.

For work team autonomy (excluding enterprises that do not use teams) the mean is 4.05. Therefore, on average, enterprises that do use work teams, grant work team autonomy only to a moderate extent, though smaller enterprises seem to grant autonomy more readily than larger enterprises (appendix D). The distribution is reasonably symmetric around a flat peak and fat tails.

Figure 15: Work team autonomy



Although the majority of enterprises in the sample were using work teams and the bulk of employees in these enterprises were involved in teams, the enterprises have given only limited autonomy to the operation of the teams. This bears out findings in the USA which suggest strongly that the incidence of European-style semi-autonomous and autonomous

teams is quite limited and that enterprises prefer to establish Japanese-style high-performance teams with limited decision-making powers (Appelbaum & Batt 1994).

Non-NMP explanatory factors

We focus upon three key non-NMP explanatory training factors in our descriptive overview of the data. Figure 16 presents the frequency distribution for human resource strategy (the degree of integration between HR practices and business strategy). The mean for HRS is 4.36. Therefore, on average, organisations are slightly more likely to integrate their human resource practices with their business strategies. The distribution is reasonably uniform for 3.0 to 6.0.

Figure 16: Human resource strategy

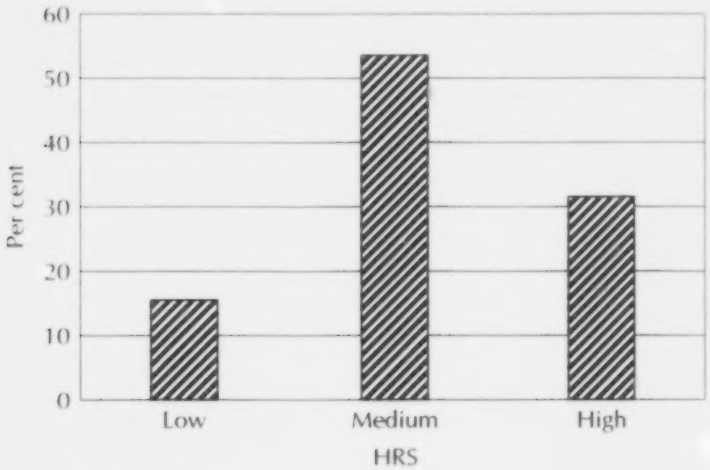


Figure 17 presents the frequency distribution for human resource performance (the use of core competencies in performance management systems). The mean for HRP is 4.57. Therefore, on average, enterprises are quite committed to using human resource performance measures for employees. Unlike HRS, here the distribution is clearly positively skewed with a modal peak around 6.0.

Figure 17: Human resource performance

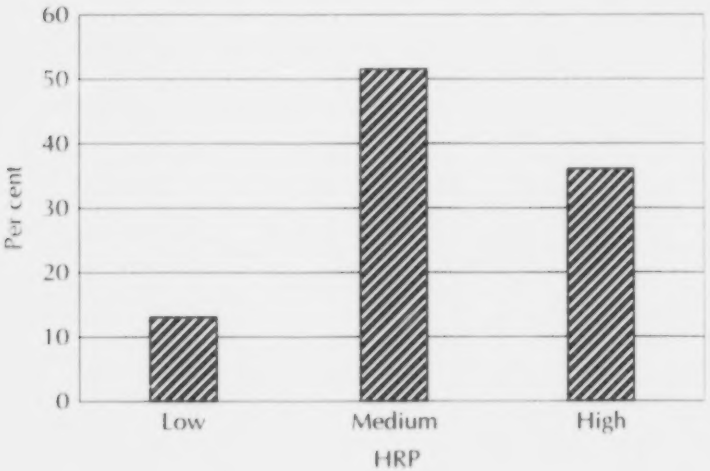
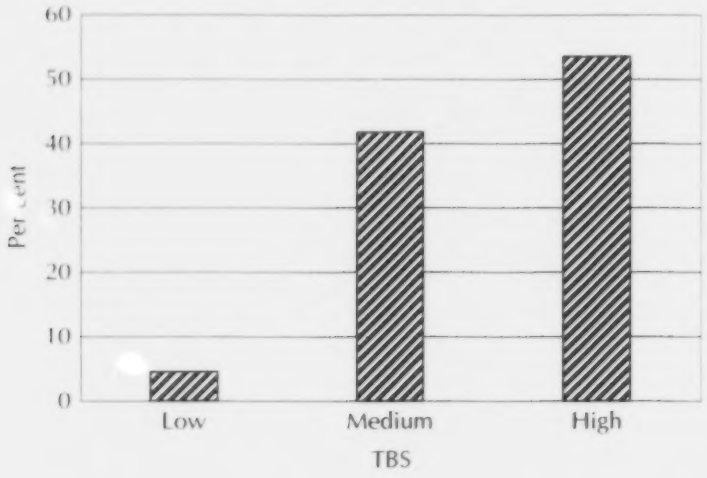


Figure 18 presents the frequency distribution for training linked to business strategy. The mean for TBS is 5.16. This is a very high level of correlation suggesting that enterprises are highly committed to the linking of training practices with their business strategies. Similar to HRP but to a greater extent, the distribution is clearly positively skewed with a very thin left tail.

Figure 18: Training linked to business strategy



Finally, we make some comment on high correlations between the explanatory training factors. Ideally, when modelling relationships, correlation between explanatory variables should be low. High correlations make it difficult to disentangle the individual influence of each independent variable in explaining the dependent variable. Table 10 presents all pair-wise correlations (between all variables in table 2) which exceed 0.3 for the scaling items of the associated measures.

Table 10: High correlations between explanatory factors

Variables	Correlation	Variables	Correlation
TQM, LP	0.605	LP, BPR	0.320
WA, TEAMS	0.727	LO, TBS	0.420
LO, TQM	0.359	TQM, TBS	0.315
LO, LP	0.437	LP, TBS	0.344

Only one correlation is greater than 0.7 and hence may be of some concern. It appears that those enterprises that use teams extensively do so with a great deal of autonomy. Note, however, that this correlation is also picking up the fact that those organisations which do not use teams have no work team autonomy. All of the correlations in table 10 relate to the NMP variables and training linked with business strategy.

Summary

To summarise what the survey has revealed about the various explanatory factors for enterprise training in the study, a few clear points can be made:

- The enterprises in the sample have a relatively strong pre-disposition for a learning organisation philosophy, the use of TQM and the use of lean production methods.
- Learning orientation, TQM and lean production are more common in small- to medium-sized enterprises with some industry concentration in manufacturing, retail, construction and finance/business services sectors.

- The use of business process re-engineering methods is less widespread and more evenly distributed by enterprise size and industry type.
- The use of work teams is quite widespread with 63% of enterprises reporting their use of work teams.
- In enterprises where work teams have been established, the majority of employees are usually involved but with only a limited level of decision-making discretion. However, smaller enterprises tend to involve more employees in teams and grant them more autonomy.
- The integration of human resource practices with business strategy is fairly well established in the enterprises, as is the use of performance management systems based on 'core competencies'.
- Training appears to be very closely linked to the strategy of the business in the minds of HR managers in the enterprises. This may reflect the relatively high level of expenditure on training in the enterprises noted in the previous chapter and the growth of a focus on behavioural skills and workplace delivery.

5 Modelling results

The key findings from the modelling of the training factors with the explanatory factors can be summarised by looking at each of the NMPs in turn and commenting on some other key factors that emerge from the analysis.

Tables 11 and 12 summarise the statistically important results from all sixteen developed models. The notation of tables 1 and 2 is employed to help summarise findings.

Table 11: Summary of significant explanatory training factors

	PAY97	PAY98	EMPLOY	MGERS	F/T	EXT	VET	FORM
LO	**	**		***				
TQM						(-)***	***	
LP								(-)**
BPR					(-)**		***	
WA						***		***
TEAMS			***					
HRS			***				***	
HRP	***	***						
HIRE			(-)***	(-)*				(-)***
VALUES					*	**		
TBS			***			***		***
SPECIFIC								
SKLEV			***					
MT				**				
CI								
TT	**	**				**		***
SIZE	ns	ns			(-)**			
UNION				(-)**			***	***
NAT					(-)**	(-)***		(-)***
PRIVAT			(-)***					

*** denotes significant at a 1% level, ** denotes significant at a 5% level, * denotes significant at a 10% level, ns denotes not significant but included, (-) denotes a negative impact.

Table 12: Summary of significant explanatory training factors

	BEHAVE	WORK	COACH	DECENT	PLAN	DEPT	TMGER	INSTR
LO	**		**	**				
TQM	***			***		(-)***		
LP					(-)*		(-)*	(-)**
BPR		**	**					
WA								
TEAMS		**	***	*				
HRS	***	***		**				
HRP								
HIRE								
VALUES							***	
TBS	***	***	**		***	***	***	***
SPECIFIC								
SKLEV						***		
MT	**		**					**
CI								
TT								
SIZE							***	
UNION					*			***
NAT					(-)**	(-)***		
PRIVAT						(-)***		

*** denotes significant at a 1% level, ** denotes significant at a 5% level, * denotes significant at a 10% level, ns denotes not significant but included, (-) denotes a negative impact.

Learning orientation. This measure is a proxy for the existence of a learning organisation philosophy amongst managers in the enterprises. Learning orientation appears to be more common in small- to medium-sized enterprises in the manufacturing, retail and business services sectors. For such a new NMP which has yet to be fully defined, much less researched, learning orientation is highly correlated with a surprisingly large number of the training factors:

- a higher level of training expenditure
- a proportionately greater attention to the training of managers
- a focus on training for behavioural skills
- a greater use of coaching and mentoring
- a greater level of decentralisation of responsibility for training to line managers

Some of these findings, particularly those concerned with the decentralisation of training and the use of coaching and mentoring methods, confirm emerging studies of the learning organisation (Raper et al. 1997). Others, particularly the attention paid to the training of managers, deserve fuller investigation. It is also worth noting that LO is the only NMP positively associated with conventional measures of the volume of training represented in this study by PAY97, PAY98 and EMPLOY.

Total quality management. TQM and its variants have been possibly the most common form of NMP adopted by Australian enterprises in the 1990s (Smith & Hayton 1999). Like learning orientation, TQM appears to be more common in small- to medium-sized enterprises in manufacturing, construction and retail. From the results of this study TQM appears to drive:

- a higher level of engagement with the VET sector (use of competency standards for training and accredited training) but
- a lower level of reliance on external training providers. These findings together suggest TQM is a factor in the provision of accredited training for employees using in-house training resources
- however, this appears to happen in the absence of a specialist training department, perhaps with the use of non-training resources
- a focus on training for behavioural skills
- the decentralisation of responsibility for training to line managers

Lean production. Throughout the analysis, lean production is consistently associated with cost-cutting measures reducing the formality of training and the level of infrastructure devoted to training in enterprises. Lean production is also more common in small- to medium-sized enterprises in the manufacturing, construction and retail sectors. Lean production appears to drive:

- a more informal approach to the training process
- less likelihood of a training plan existing
- less likelihood of a training manager or workplace trainers/instructors existing

Business process re-engineering. This is one of the newer NMPs to be adopted in Australian enterprises. It is less widespread than the three preceding NMPs and is more evenly spread amongst large, medium and small enterprises and industry sectors. BPR appears to drive:

- higher engagement with VET (use of competency standards and accredited training)
- a higher degree of workplace delivery of training and the use of coaching/mentoring
- more even distribution of training between full-time and part-time/casual employees

Teamworking. In this study, teamworking is measured in terms of both its extent (percentage of employees involved) and the level of autonomy given to teams. About two-thirds of the enterprises in this sample were using teams at the time of the research. Again, teamworking is more common in small- to medium-sized enterprises where higher numbers of employees are more likely to be involved in teams. Small enterprises are also more likely to give greater autonomy to their teams. Work teams appear to be more common in the construction, finance and business services sectors where they are also given more autonomy. A high level of teamworking appears to drive:

- a more even distribution of training amongst all categories of employees
- a higher level of workplace delivery of training and use of coaching/mentoring
- greater decentralisation of the training function

Higher work team autonomy appears to drive:

- a greater use of external training provision
- greater formalisation of training

Other explanatory variables

A number of non-NMP factors were also investigated in this study. Many of these were derived from previous studies which had highlighted the importance of human resource policies, employee skill levels, competition, unionisation and ownership structures as important factors influencing training arrangements at the enterprise level. Some interesting conclusions about the importance of these factors emerge from the survey analysis.

The importance of strategy. Business strategy was measured in terms of its integration with both training and broader human resource practices and policy (HRS and TBS). The link between

training and business strategy emerged as a very important explanatory factor across a wide range of the training variables. TBS was positively correlated with:

- a greater number of employees receiving training
- a greater level of external provision of training
- a higher level of formalisation of training
- a focus on behavioural skills in training
- a higher level of workplace delivery of training and use of coaching/mentoring methods
- greater use of written training plans
- the existence of a specialist training department and a training manager
- greater use of workplace trainers/instructors

In other words, the integration of training with business strategy is the most important single factor in driving a wide range of training activities and appears to lead to an across-the-board boost to enterprise training in all its forms.

Competitive intensity did not appear to be related to any of the training factors. Market turbulence and technological turbulence, however, were related to some aspects of training. Market turbulence (high levels of product innovation in the industry) was related to the existence of training managers, a focus on training for behavioural skills, use of coaching/mentoring (which may be consistent with higher levels of management training) and the use of workplace trainers/instructors. Technological turbulence (high levels of technological change in the industry) is related to higher levels of expenditure on training, greater use of external training provision (possibly related to use of vendor training for new technology) and greater formalisation of training.

Enterprise size. In conventional studies of training in enterprises (for example, through the various ABS surveys etc.), size in terms of numbers of employees emerges as a key variable in the determination of training arrangements. In this study, however, size did not emerge as a particularly important factor in comparison to the other variables measured. Size appears to be strongly related only to the training of part-time/casual employees and to the existence of a training manager. In many respects the importance of size appears to run against expectations. Thus, many of the NMPs seem to be more prevalent in small- to medium-sized enterprises than in large enterprises. Learning orientation and the use of teamwork are very important in this regard.

Unionisation. Overseas studies have shown that the presence of unions in enterprises positively influences the provision of training for employees. The present study confirmed some of these effects. Thus, unionisation is associated with a more even spread of training opportunities across all categories of employees, use of competency standards and accredited training, greater formalisation of training, the existence of a written training plan and the use of workplace trainers/instructors.

6 Results of the telephone interviews

The survey was followed up by a series of 78 telephone interviews carried out in November–December 1998 with a sub-sample of the enterprises that had participated in the survey. The aims of the telephone interviews were:

1 Investigate some of the issues arising from the results of the survey

2 Seek qualitative corroboration on the extent of the implementation of new management practices

3 Explore the mechanics of the relationship between enterprise training and the adoption of NMPs

4 Investigate issues concerned with the external provision of training, particularly through the VET sector, to enterprises undergoing organisational change

Methodology

The sample for the telephone interviews was developed from a sub-sample of the sample used for the main survey. As part of the survey process, participants were invited to provide contact details if they were interested in receiving more information on the outcomes of the research. In total, 219 of the 584 participants who made valid returns to the survey included their contact details. This group of 219 respondents was examined for randomness and its representativeness of the original sample. A group of 200 were selected for contact. Of the 200 enterprises contacted, 78 agreed to participate in a 20-minute telephone interview, representing a 34% participation rate.

The research team drew up a protocol for the conduct of the telephone interviews. This is reproduced at appendix E. The protocol specified eight question areas:

1 Basic data on the enterprise—name, size, business sector, title of respondent

2 Categorisation of the change process in the enterprise using the five major categories developed for the survey—learning orientation, total quality management, lean production, business process re-engineering and teamworking

3 A description of the basic elements of the change process. This question allowed the researcher to check the understanding of respondents of the project's categorisation of change processes and make a more valid judgement on the nature of the change process in the enterprise

4 The part that training has played in the change process in the enterprise. This also included a brief discussion of the nature of training in the enterprise

5 The way in which training has changed as a result of the change process

6 The extent to which the enterprise has used external training providers to support the change process

7 Likely changes to training activities envisaged in the next 12 months

8 Any other comments

Interview participants were faxed the protocol for the interview, including a brief summary of the nature and purpose of the research, 24–48 hours before the time arranged for interview. This enabled respondents to think about the questions and prepare for the interviews as well as serving as a reminder of the interview arrangements. Table 13 summarises the responding enterprises by size.

Table 13: Interview respondents by employee size

No. of employees	Percentage frequency
Small (n < 20)	8.9
Medium (20 > n < 100)	46.2
Large (100 > n < 1000)	30.8
Very Large (n > 1000)	14.1

The sample for the interviews, therefore, includes a lower percentage of smaller enterprises and a higher percentage of medium-sized enterprises than the sample for the survey. However, the proportion of large enterprises (employing more than 100) is similar, 44.9% in the telephone interview sample, 47.1% in the survey sample.

Table 14 summarises the responding enterprises by industry sector.

Table 14: Interview respondents by industry type

Industry type	Percentage frequency
Food & beverage manufacturing	2.6
Machinery & equipment manufacturing	8.9
Finance & insurance	16.7
Retail/wholesale	7.7
Mining	2.6
Other manufacturing	12.8
Transport & storage	1.3
Property & business services	14.1
Other	33.3

Thus, the telephone interview sample is rather differently constructed to the survey sample with finance and insurance (8.1% of the survey sample) more highly represented and a slightly higher proportion of miscellaneous enterprises (Other, 29% of the survey sample).

Table 15 presents the breakdown of the titles of the individual respondents to the interviews in each enterprise.

Table 15: Job titles of respondents to interviews

Job title	Percentage frequency
Chief executive officer	1.3
Managing director/general manager	28.2
Company secretary	3.8
Finance/administration manager	7.7
Production manager	1.3
Human resources director	2.6
Human resources manager	32.0
Human resources officer	5.2
Training manager	9.0
HRD/OD specialist	2.6
Other	6.4

Human resource specialists including HR managers, directors, officers and training/HRD specialists constituted the bulk of the sample (51.4%) with training and HRD specialists comprising 11.6%. The next most frequent respondents were very senior managers—

managing directors, general managers and company secretaries, which together comprised 32% of the sample. It is worth noting that all these respondents had been responsible for completing the original survey questionnaire and were, thus, in the best position within their respective enterprises to answer the questions in the telephone interview protocol.

Full details of the participating enterprises together with short summaries of their responses to the interview questions are included at appendix F.

The change process

Table 16 presents a summary of the answers to the initial question in the protocol asking respondents to identify the nature of the change process within their enterprises. It should be noted that respondents were allowed to cite more than one category of change process and often did so.

Table 16: Incidence of NMPs in responding organisations

Type of change	Percentage frequency
Teamworking	46.2
Total quality management (TQM)	42.3
Business process re-engineering	24.4
Lean production	24.4
Learning organisation	10.3
None	5.1

The responses to this question present some interesting contrasts to the results from the survey. Whilst teamworking is still the most common NMP recorded in the interviews, with 46.2% of respondents citing the presence of teams in their enterprises, this contrasts with the 63% of enterprises in the survey who reported that they use teamwork. The results for TQM and BPR are consistent with the survey, with 42.3% of interviewees reporting the use of TQM compared to 43.7% of the survey sample recording a high level of commitment to TQM. Similarly, 24.4% of interviewees reported their use of BPR compared to 28.3% of the survey sample who recorded a high commitment to BPR. However, the results for lean production and the learning organisation differ in the two samples. Whereas 44.5% of the survey sample recorded a high commitment to lean production, only 24.4% of the interviewees reported their enterprise's use of the process. In the case of learning organisation, 40.2% of the sample recorded a high commitment to a learning orientation whereas only 10.3% of the interviewees reported their enterprise's pursuit of the learning organisation.

These results may reflect both the effects of the different methodologies and differences in the level of understanding of the terms used in the project. During the interviews, respondents were asked to clarify what they meant by their categorisation of the change process in their enterprises. This often resulted in a re-evaluation of respondents' understanding of the change process in their enterprises. Thus, despite the fact that 67% of survey respondents reported their enterprise's use of teams, a more discursive conversation with the researcher led only 46.2% of interview respondents to recognise the existence of teams in their enterprises. The distinction in this case may be between survey respondents who view any form of workgroup as a team and interview respondents who understand that teams involve more than an arbitrary grouping of employees in similar positions. In the case of lean production and learning organisation, the terms themselves were not well understood by interview respondents. This reflects the relative novelty of the processes in the Australian organisational landscape and a lack of a complete understanding of the theory behind the concepts. Thus, many interviewees likened lean production to simple cost-cutting measures and running a 'lean' enterprise in terms of numbers of employees, disregarding the other aspects of LP including just-in-time, Kanban and quality improvement. Many interviewees also displayed a poor understanding of the notion of the learning organisation with many equating it to a simple increase in the overall level of training or a greater concentration on the development of individuals in the enterprise. The notion of the learning organisation was also compounded by the use of the 'learning orientation' construct in the survey as a proxy for the learning organisation.

The process of change

The interviews revealed some interesting observations on the nature of change within modern Australian enterprises. In general, interviewees found it difficult to classify change process within their own enterprises into the categories used in the research. This occurred for a number of reasons:

- As discussed above, not all the categories of change were well understood by the interviewees. Although these concepts may be well recognised in the literature there is still a significant gap between management theory and management practice in many aspects of NMPs.
- Many enterprises had undergone a series of changes over the last three years (the period covered in the interviews). As a result, many interviewees nominated a number of categories to describe various phases of the change process or concurrent aspects of it.
- In some cases, enterprises had devised their own change processes, which incorporated aspects of many of the change processes covered by the five NMPs. For example, Saab Australia, had adopted a change program, the Saab Way, which had been devised in Sweden based on a General Motors (majority shareholder in Saab) change program. This involved group working, visioning and a focus on quality procedures—thus combining a number of different NMPs but not easily classifiable into a single category.

As a result, change tended to be continuous and customised. Most enterprises had experienced some form of programmatic change and had introduced NMPs, but the change process rarely stopped with the adoption of one or another NMP. Typically, enterprises might have experimented with quality circles in the early 1990s and moved from this into a form of TQM. This, in turn, fostered greater teamwork. At the same time, the use of IT encouraged enterprises to re-examine their business structures and processes and so on.

Thus, at auto component manufacturer, Preslite, TQM had been adopted in 1987. This had led the enterprise to introduce formal teamwork in the early 1990s as the processes of TQM increasingly emphasised the role of small group work in the TQM process. Latterly, the enterprise had moved again to incorporate some of the key elements of lean production through the adoption of the Toyota Production System. The latter move to lean production had, of course, been encouraged by Toyota Motor Corporation, which was a major customer of Preslite.

Many other enterprises displayed a similar pattern of transition from one form of organisational change to another—though not necessarily in such a logical order. Thus, many of the enterprises had embarked on the process of ISO quality accreditation in the last six years and this had become an impetus for further change within the enterprise, often resulting in the adoption of TQM, teamworking or the learning organisation.

Larger enterprises tended to customise change processes in a more conscious way than smaller- or medium-sized enterprises. This may reflect the general use of consultants in larger enterprises who bring to their client base standardised forms of organisational change such as TQM or BPR (Kieser 1997). Management in larger enterprises feels quite comfortable in adapting and customising these standard forms to the requirements of their own organisations. Thus, during the telephone interviews the research team discovered a number of TQM-style quality programs, which were clearly based on the TQM concept but had been adapted in various ways. For example, Barrter Enterprises, a large rural-based food processing enterprise, had adapted TQM to its specific requirements and renamed the process BQM! This enterprise was also in the process of adapting the new Frontline Manager Initiative to suit the needs of their supervisory staff. In multi-national enterprises, there was evidence that the overseas parent enterprise would often seek to impose a uniform change process on all subsidiaries. Thus, the adoption of the Saab Way program referred to above by the Australian subsidiary and the use of TQM at Cummins Power Generation on the back of the success of the US parent in winning the Baldridge Award a few years earlier. Sometimes, the imposition of a particular process of change on the Australian subsidiary was the result of the globalisation of the parent's operations. Thus, ISP Australia, a US-owned specialty chemical manufacturer, had implemented a radical restructure of its business units as a result of the parent's decision to globalise production and create trans-national product development teams. Similarly, BP Exploration had restructured its business around the technology of the Internet, which enabled the enterprise to form cross-functional teams to handle the project management of the enterprise.

Smaller- and medium-sized enterprises tended to be more ad hoc in their approach to change. Lean production was nominated by a number of small- and medium-sized enterprises as being their preferred route to change. However, on investigation, the use of lean production methods was quite unusual in the sample. Most enterprises equated lean production with cost reduction. This was particularly true of small and medium-sized enterprises, which tended to emphasise the importance of running operations with as few staff as possible to meet the exigencies of competition based primarily on cost. Typical of this group of enterprises was Martins' Sand and Gravel in Queensland, a garden and landscape supplies enterprise. The enterprise employed 18 people but the MD stressed the cost-based nature of competition in the industry and the absolute requirement to 'run lean' and to multiskill all employees in order to remain flexible. Change in this enterprise was based on improving multiskilling and on the use of training to improve the efficiency of drivers and operators.

The learning organisation

The notion of the learning organisation was the least frequently cited form of organisational change and least understood. Only 10% of respondents used the term when describing the process of organisational change taking place in their enterprises. This provides an interesting counterpoint to the survey in which the notion of 'learning orientation' was adopted as a proxy for the learning organisation. In the survey, 40% of respondents recorded a high level of commitment to the principles of learning orientation.

The discrepancy may be explained by two factors. Firstly, the notion of the learning organisation is relatively underdeveloped (Raper et al. 1997). It is not clear just what an organisation does when it adopts the principles of a learning organisation. In the telephone interviews this lack of conceptual development was demonstrated by respondents who often equated the enactment of a learning organisation with a greater commitment to training. Thus Fujitsu Australia and Hunter Water Corporation, who both indicated that implementation of the learning organisation was a significant part of their organisational change process, described their increasing commitment to training and identified the learning organisation as a 'vision' rather than a specific programmed commitment. Secondly, respondents did not clearly understand what the learning organisation meant and in some cases had not heard of the concept. Thus a car leasing company claimed that the learning organisation was part of their program for organisational change, but on further investigation clearly understood that term to mean an increased commitment to training.

However, in some cases the notion of the learning organisation had been more clearly articulated by enterprises. In most cases, this meant a greater commitment to the development of the potential of the individual employee, rather than a straightforward commitment to raising the overall level of skills or volume of training. Usually this commitment to the development of the individual was also linked to the notion of 'capturing' the knowledge and skills of individuals so that the whole organisation might benefit from what they knew or had learned. This is much closer to the philosophical basis of the learning organisation. This notion of the learning organisation as a means of capturing individual skills and knowledge for the organisation as a whole, was most clearly enunciated by enterprises providing professional services. Thus the solicitors, Blake, Dawson, Waldron, were concerned that the specialist legal knowledge acquired by individual lawyers within the firm was not being disseminated for the benefit of other staff. They devised a system of training and structured job rotation so that younger staff in particular could glean this knowledge through formal seminars and attachments to senior staff. Similarly, accounting firm Grant Thornton had moved from a system of structured off-the-job training for staff to one based on coaching, structured attachments and modularised training, in order to develop the individual skills of staff and ensure that the knowledge acquired by staff in the course of their duties was distributed as widely as possible.

Total quality management

TQM was the second most popular NMP described by the interviewees with 33% of respondents identifying TQM in their enterprises. This confirms the pattern discovered in the survey that TQM is one of the most popular and enduring forms of organisational change processes. The number of enterprises reporting that they were implementing or had implemented in the past a form of TQM—or other related quality assurance program—

suggests that TQM has become a standard measure for Australian enterprises. TQM may be seen as no longer a 'new' management practice but one which has become embedded in the way that many enterprises now approach their business. It was unusual in the sample to find enterprises that quoted TQM alone as their preferred strategy for organisational change. TQM was usually quoted with another NMP. In most cases the other NMP quoted was teamworking. Nineteen per cent of the sample quoted TQM with teamwork as their strategy for organisational change. The synergy between these two NMPs is not surprising given the emphasis on group work in TQM and the findings in other studies (Sitkin et al. 1994).

TQM had also been customised by enterprises more than any other NMP. The example quoted above of BQM at Bartters Enterprises, is typical of the way in which enterprises had used the principles of TQM selectively to fit the needs of their own enterprises. Thus BHP Manganese had introduced TQM in 1994 but had devolved responsibility for the running of the system to work teams, which it had introduced subsequently. Others such as business information group, Dun and Bradstreet, had come to TQM through the ISO accreditation process, whilst Energy Bricks Australia had built TQM into their latest Enterprise Agreement. In this way, TQM served many enterprises as a platform on which other NMPs could be introduced.

Lean production

Slightly less than 25% of the sample had introduced lean production. As noted above, this contrasts with the findings in the survey that showed nearly 45% of respondents recording a high level of commitment to lean production. A similar explanation for the discrepancy between the survey and the telephone interviews can be advanced for lean production as for the learning organisation. Lean production was not well understood by the interviewees. In most cases lean production was understood as running lean staffing levels and operating with as few staff as possible. Thus lean production was viewed as a synonym for cost reduction. The other aspects of lean production—the use of JIT and Kanban systems, close relationships with suppliers and the use of quality improvement processes—were often not understood by the interviewees. Many respondents discussed the level of competition when citing lean production as their preferred NMP. This was particularly true of smaller- and medium-sized enterprises where competition was usually viewed in terms of cost. Thus civil engineering enterprise Fulton Hogan operated on very tight margins in their Australian operation and had turned to lean production as a means of keeping estimates low. Similarly, Hunter Water Corporation had reduced the size of its workforce by over 50% in the last five years in the wake of corporatisation. The corporation had adopted a deliberate strategy of running a low cost operation.

Business process re-engineering

BPR was the least understood of all the NMPs canvassed in the interviews. As with lean production, respondents tended to confuse BPR with a simple adoption of restructuring in the enterprise rather than the other elements identified by Hammer and Champy (1993). Quaker Chemicals, a distributor of specialty chemicals, identified radical restructuring based on delayering of management as the implementation of BPR. Boots Healthcare had moved out of the manufacture of their products into sales and distribution. This involved a major restructuring of their operation and a change in culture from one that was production centred to one that was sales/customer centred. Boots identified this process as BPR. Some enterprises, however, had captured the IT-driven nature of BPR. BP Exploration were moving towards the use of the Internet to radically change the nature of their business operations in Australia. The change to Internet-based business had led the enterprise to completely rethink their business processes in a manner that reflected a true BPR approach. Similarly, chemical group Rhone-Poulenc had used IT to break up and outsource many of its non-core functions. This applied to the training department, which had moved much of its operation online and moved its trainers out of the organisation, where they could carry out customer service training on contract from the customer, rather than as part of the package offered by Rhone-Poulenc.

Teamworking

Teamworking was the most frequently cited NMP by the interviewees. Forty-six per cent of the sample claimed that they used teamwork in their enterprises. However, the survey data suggested a far higher incidence of teamworking (63% of participating enterprises). The reasons for this discrepancy have been discussed above; however, a further conclusion might be drawn from the level of autonomy granted to teams. The interviews revealed that teams were generally given little decision-making autonomy and conformed clearly to Banker et al.s' (1996) categorisation of high performance work teams. This finding corresponds with the survey data, which showed that enterprises grant only limited autonomy to their work teams. It appears that enterprises tend to count any form of basic group working as 'teamwork'. In these circumstances almost any group of workers that are to some extent interdependent may be designated a team, a phenomenon described in the recent work of Delbridge (2000). Thus respondents to the survey may be more predisposed to claim the existence of teamwork. However, when exposed to the questioning of an interviewer, respondents may realise that group working does not necessarily constitute teamworking and recognise that teamworking is less extensive than the survey data suggested.

There were few examples in the interview data of team autonomy. In most cases teams had been introduced either to enable enterprises to cope with lower staffing levels, that is, horizontal enrichment of jobs or to enable multiskilling. Thus the Surveyor General's Department of New South Wales had established teams one year before the research in order to enable implementation of TQM. Similarly Bambach Wire and Cables had recently put most of their employees into teams in order to allow employees to take more responsibility for quality in line with the enterprise's quality improvement program. There were some examples of greater team autonomy. Thus, Fletcher Challenge had re-organised their Boyer, Tasmania paper mill into teams after a radical delayering of management in the wake of Fletcher's acquisition of the plant from ANM. This involved the considerable devolvement of management functions and decision-making discretion to the teams. At Roy Morgan Research, groups of analysts had been organised into self-managing teams with full decision-making powers over the conduct of the various accounts held by members of the team. This was probably the best example of full autonomy granted to teams in the interview sample.

One consequence of the low level of autonomy granted to teams was the continuing existence of management structures to enable decisions to be made and implemented. It did not appear from either the interviews or the survey that Australian enterprises had taken advantage of the implementation of teamwork to significantly reduce the numbers of managers in their organisational structures, which is one reason often quoted by advocates of socio-technical systems for the adoption of teamwork. This is particularly true of first-line managers or supervisors. Most teams were controlled by supervisors appointed by management of the enterprise. The question of the changing role of the supervisor in a team-based work environment had not been clearly addressed by the enterprises, although training for front-line managers was beginning to be taken up by many of the enterprises on the sample.

Training

Broadly, the results of the telephone interviews reflect the results of the survey. Despite the training reforms of recent years and the emphasis on the importance of training in government policy and managerial rhetoric since the late 1980s, there is little evidence of a sea change in the practice of training at the enterprise level in Australian enterprises.

Respondents to the interviews showed that they and their enterprises were increasingly aware of the importance of training to the success of their organisations. But in many cases, significant improvements in the provision of training were only beginning to happen or had yet to occur. Seven enterprises in the sample (almost 10%) claimed that they provided no training at all for their employees. Two of the enterprises claimed that training had been eliminated in their enterprises in recent years. A medium-sized manufacturer of building materials had eliminated training as an unnecessary cost for the enterprise. The newly appointed CEO took the view that the introduction of a performance management system for managers was likely to yield far higher productivity improvements for the enterprise than training for the workforce. A national provider of specialised rehabilitation services also reported that training had all but disappeared as an activity in the organisation, following a decentralisation of training to line management two years previously. Decentralisation had

not been accompanied by the institution of sufficient central controls to stop line managers simply eliminating training on cost grounds. Nor were these enterprises small; the building materials manufacturer employed 170 at its manufacturing plant whilst the rehabilitation organisation employed 50 professional staff nationally.

There were, of course, countervailing examples of enterprises that made significant investments in training. Thus Flora Foods supported a training department under the direction of a training manager and was in the process of a major project to extend engineering skills training to its entire shop floor staff. However, these examples were few. The bulk of enterprises in the sample took a very basic approach to training. Training was largely informal; it did not involve a formalised approach involving needs analysis, training planning and delivery. Training was primarily focussed on the job needs of staff and carried out on the job. Training was largely delivered internally.

A number of respondents indicated that training was increasingly exposed to a cost–benefit analysis by their enterprises. Enterprises were looking to maximise the value of their investments in training and were increasingly disposed to target training to areas of need. This notion of targeting or focussing training recurred repeatedly in the interviews. Thus Dexam Industries, a small general engineering enterprise, had made a decision to multiskill employees in order to cope with a new production system. In order to achieve this goal, the enterprise had decided to spend $1000 per employee on training in the following year. But, managers at the enterprise were clear that training expenditure was to be tightly targeted on needs—the $1000 was not a right for every employee but a response to a strategic decision by the enterprise. Similarly, the Newcastle Permanent Building Society had moved towards a quality system based on customer service, which the enterprise regarded as a source of competitive advantage in the local market. This was to be supported by extensive training—but focussed solely on the development of customer relations skills. The enterprise was willing to invest quite significantly in training but only if it achieved specific results.

Use of external training providers

The use of external training providers was not as extensive as recent reforms to the training market might suggest. In general, the enterprises in the sample used external providers sparingly and tended to source most of their training requirements internally. This was particularly true of technical and job-related training in which the enterprise felt it had significant skills which could be passed on to other employees. However, this internal orientation in training did not necessarily translate into an investment in training infrastructure such as training departments, training specialists or training facilities within enterprises. In many cases, training was carried out in the workplace using a minimum of facilities and by non-training staff. Thus Blake, Dawson, Waldron, with a staff of 1200 professionals, had implemented an extensive internal training program as part of their move towards a learning organisation referred to earlier. However, most of this training was carried out by the senior partners and other specialists within the enterprise. At the other end of the size continuum, ISP Australia, a speciality chemicals manufacturer employing 17 staff, had adopted TQM. All the training for the implementation of this program was carried out internally, although a private provider had been engaged to provide limited training in leadership skills.

Training was also becoming more individualised. This has been noted in previous studies (Smith & Hayton 1999), where the importance of the individual in driving training within enterprises was highlighted. The interviews reinforced these observations but also showed that enterprises were increasingly targeting their training to the specific needs of individual employees rather than investing in large-scale training programs covering the entire workforce or groups of employees. Thus some enterprises had moved to a system of individual training plans; others had adopted performance management systems which highlighted the performance improvement requirements of individuals. In these cases, training was geared to the individual employee rather than the group.

However, the processes of internalisation and individualisation of training had by no means eliminated external training providers. Private training providers and consulting organisations were widely used in the sample enterprises to meet specific training needs. Usually, external providers were used training in information technology, sales and customer relationship skills and management training. In the IT field, the fast pace of change and the need within some enterprises to adapt to new technologies, quickly gave external providers a

competitive edge in bidding for training contracts within enterprises. Sales and customer skills were also areas in which enterprises often felt they had little internal knowledge or skill and so looked to the expertise of an external provider. Management skills fell into the same category. However, the use of external training providers was limited to these specific areas in which enterprises did not possess the skills that could be passed on by internal staff.

The use of TAFE by respondents to the interviews was also quite limited. Many respondents commented that they did not use TAFE. There appeared to be two main reasons for this. Firstly, many respondents were not aware of what TAFE institutes could offer in terms of industry-based training. Thus, NL Fleet Services, a medium-sized car leasing enterprise, made significant use of private training providers and consultants. The enterprise was looking for more management training, particularly for front line managers and had in the past used the Australian Institute of Management for this purpose. However, they would have been interested in examining what TAFE had to offer but did not know that TAFE offered training for industry in a variety of flexible modes. Nor was the enterprise aware that TAFE could also offer the Front-line Management Initiative package. The enterprise would have been willing to consider using the services of TAFE if they had been aware of them.

A second reason was that TAFE programs were not judged to be relevant to the training needs of the enterprise. In some cases, this judgement was made by enterprises that were themselves at the cutting edge of technology in their respective industries. Thus Fletcher Challenge used TAFE extensively at their Boyer mill for apprenticeship and traineeship training. However, TAFE had little to offer the mill in terms of ongoing training for their staff in the rapidly changing field of paper production technology. Training for these needs was sourced internally. Enterprises in the finance sector also reported that they would not use TAFE because of the lack of the specialist skills that they needed. Nowra Chemicals, a medium-sized manufacturer of water treatment chemicals and detergents, were clear in their comments that, although they had used TAFE for other training in the enterprise, TAFE did not possess the industry skills that they needed in order to source their training requirements through them.

Finally, TAFE was viewed as too inflexible by some enterprises, despite the training reforms of recent years that have focussed on making TAFE more responsive to the needs of industry. Inflexibility was usually in the form of difficulties in adapting curriculum to the needs of specific enterprises and difficulties associated with delivery of programs on site.

However, despite these problems with the role of TAFE in industry training, there were a number of success stories. Thus Flora Foods had developed a strategic partnership with TAFE to deliver their Certificate in Mechanical Engineering to all their operational staff. TAFE had a permanent presence on site and the training was delivered to the enterprise's specifications at a time to suit the staff. Bartters Industries, also in the food industry, had developed a significant relationship with both New South Wales and Victorian TAFEs for the development of materials for the delivery of the Certificate in Food Production at their plant in Griffith, NSW, and were working with the NSW TAFE on the customisation and delivery of the Frontline Management Initiative training for the enterprise. Similarly, Allied Pickfords, the removalists, were developing a competency-based approach to their training in an attempt to significantly broaden the skills base of their workforce. TAFE was a major provider of their new enterprise training programs.

A major area for TAFE involvement in training, apart from the traditional apprenticeship and traineeship programs, was in the provision of training for individuals. This was an important growth area in the training arrangements of the enterprises as discussed above. Many enterprises were formulating a more individualised approach to their training. This involved the preparation of individual training plans, perhaps linked to a performance management system. TAFE was often quoted as a major source of provision for these individualised training plans. Thus many enterprises encouraged their staff, through tuition reimbursement schemes and the like, to undertake relevant professional development programs through TAFE in their own time. The individual made an investment in the training in the form of the sacrifice of their own free time supported by the enterprise financially. Hills Industries in South Australia provides a typical example of this pattern. This enterprise had used external providers extensively for IT training and for training in leadership. TAFE, however, had played an important part in the process by providing a source for the individual development of its employees. Whilst the enterprise was not sure how effective the individual training sourced in this way had been, the provision of individual training sourced through the TAFE

system was regarded as a critical part of the overall training arrangements that had been instituted in the enterprise.

A mixed picture emerges of the role of TAFE in the provision of training at the enterprise level from the respondents to the telephone interviews. On the one hand, TAFE provision is not widely used to meet enterprise training needs, either connected to the change process or not, beyond the traditional areas of apprenticeship and traineeship training. TAFE is not widely perceived to be a relevant provider of skills training to enterprise. However, TAFE is widely and increasingly used for the individual development of employees. As individualised training becomes a more significant part of overall training provision at the enterprise level, so TAFE will increasingly benefit from providing professional training sponsored by enterprises.

Training and organisational change

The telephone interviews revealed that there were significant linkages between training and organisational change. Taking each of the NMPs in turn:

- *Learning organisation.* The telephone interviews tended to confirm some of the findings of the survey. Those enterprises that claimed to have implemented some form of the learning organisation had tended to increase their commitment to training and focussed their training on managers and on the use of on-the-job methods such as coaching. However, the limited understanding of the theory of the learning organisation revealed in the interviews makes it difficult to generalise from these results. Nevertheless, the tendency amongst respondents for a greater decentralisation of training and a higher overall level of training investment, bears out the general relationships found in the survey.
- *Total quality management.* The interviews revealed that enterprises which had implemented TQM or similar quality assurance systems had increased their overall level of training or revived moribund training systems. Much of this training was based on the development of behavioural skills such as teamworking (TQM was often accompanied by teamworking in respondents' answers to the form of organisational change they had implemented), interpersonal and problem solving skills. Training had often played a major role in the implementation of teamworking and had involved the training of large numbers of staff in specific TQM skills (data collection, analysis etc.) and in facilitation skills. Training was often carried out internally, although consultants were typically engaged to begin the process. This confirms some of the findings from the survey, particularly the use of internal trainers and the focus on behavioural skills. However, the survey findings in regard to the lack of use of competency standards and accredited training were not borne out in the interviews.
- *Lean production.* The cost reduction based understanding of lean production was reflected in the comments of respondents on training. Thus, enterprises which had implemented lean production often responded that they undertook little or no formal training or that training was mainly on the job or outsourced. Where training occurred in these enterprises, it tended to be on-job focussed and skewed in favour of managers.
- *Business process re-engineering.* BPR tended to give rise to decentralised forms of training—responsibility for training passed to line managers, on-job training methods and a greater focus on the training requirements of individuals rather than groups of enterprise-wide training needs. This is in line with the findings from the survey that emphasised the use of coaching/mentoring training methods and a more even distribution of training within the enterprise. However, it was not clear from the interviews whether BPR engendered a higher level of overall training or whether training played a significant role in the implementation of change programs.
- *Teamworking.* Teamworking was the most frequently cited NMP in the telephone interviews. As such, it appeared to be accompanied by an array of different forms of training. In general, teamworking appears to give rise to a higher overall level of training. This training was focussed on behavioural skills for the workforce and on management training for more senior staff. Specific training for teamwork was often cited by respondents as well as training for a greater degree of customer focus (in the service sector) and culture change. A tendency to decentralise responsibility for training in the sample overall was reflected in the response of those enterprises that had implemented teamworking. Thus the key elements of the findings of the survey—decentralisation of training and the use of workplace delivery—were borne out in the telephone interviews.

The implementation of the NMP's examined in this study were associated with distinct effects on training provision at the enterprise level in the telephone interviews. However, a direct connection between organisational change and levels or types of training was not revealed in either the survey or the telephone interviews. Rather, the connection is indirect and the impact on training mediated by other variables such as the market position and culture of the enterprise. Few of the respondents claimed that training had played a major role in the implementation of their change programs. In those cases where training had been significant, it was clear that the change programs had been implemented in a highly structured form which emphasised the importance of training to the success of the change process. However, in most cases, change had come about in a less structured fashion. In these cases training was playing a catch-up role, dealing with the consequences of change rather than playing a major role in its planning or implementation

The relationship of training to the degree of structure in the planning and implementation of change confirms the survey findings on the importance of business strategy to the level and type of training provided by enterprises. The telephone interviews confirm that where enterprises take a strategic and structured approach to organisational change, then training is a major consideration in the implementation plan. In these cases there is a direct and positive impact on training from the planning and implementation of change programs, and training plays an important and integrated role in the successful implementation of change. However, in many cases organisational change proceeds in an ad hoc, customised way. In these cases it is clear that training is not a major consideration in the planning process for change. Training is required in order to deal with the consequences of change—the need for new skills, the need for management training and the need for the development of individuals whose skills play an increasingly important part in the success of the enterprise.

Training for organisational change appeared to highlight the importance of management training and development in the responding enterprises. In many cases, training for change began with the managers of the enterprise. Thus the Australian Kidney Foundation was moving towards the implementation of aspects of the learning organisation. This process had begun with managers who had received training in what the learning organisation meant and how it might be implemented within the enterprise. At Energy Bricks Australia the organisation was in the process of introducing TQM. All the managers in the enterprise had received training as TQM facilitators and part of their new role was to cascade this training throughout the organisation, acting as trainers themselves. In some instances, the emphasis on management training had translated into a focus on the role of the supervisor or front-line manager. Thus P&O Ports, the stevedoring company, was undergoing a period of considerable change in the wake of the waterfront dispute of 1998. They were attempting to introduce TQM and teamworking but in a climate of considerable union suspicion. In this case, the enterprise was focussing on the development of supervisors who were viewed as the lynchpin of effective organisational change at the ground level, in the ports. Bartters Industries was moving from the use of TQM towards teamwork and employee empowerment. The enterprise had introduced considerable training for shop floor staff including the presentation of the Certificate in Food Processing. The next focus for training in the organisation was the introduction of the Frontline Management Initiative training program. The motivation for this was the realisation of the pivotal nature of the supervisor in the effective implementation of change.

In some of the responding enterprises the emphasis on management training and development was part of a broader move towards performance management systems. Thus at Grant Thornton (accounting practice) a new training system was being introduced, based on the performance management system, which identified the individual training needs amongst the accounting professionals employed in the enterprise. At Saab Australia, the level of training activity was increasing rapidly as a result of the recent introduction of a performance management system. The introduction of performance management highlighted the increasing role of the individual in many of the enterprises' approach to training and development. As discussed earlier, increasingly enterprises appear to be focussing their training activities on the needs of the individual rather than adopting the 'blanket' training approach of previous years, which did not distinguish between the differing needs of the individual and often resulted in poor training outcomes for the organisation. Within this more individualised approach to training at the enterprise level, the individual employee plays an increasingly important role in ensuring that his or her own training needs are met and bringing their training and development needs to the attention of the organisation.

Summary

In summary, the key findings emerging from the telephone interviews include:

- The more discursive nature of the telephone interviews led respondents to give slightly different accounts of the extent of the adoption of NMPs in enterprises.
- Only 46% of respondents answered that they used teams in their enterprises. Forty-four per cent of respondents identified their use of lean production techniques and slightly more than 10% identified their use of the learning organisation approach. The extent of adoption of TQM and BPR appeared similar to the data in the survey.
- Organisational change appears to have been customised to fit the requirements of individual enterprises. This is particularly the case in larger enterprises.
- Organisational change is continuous with most enterprises reporting that they have moved from one form of change program to another in recent years.
- The use of a learning organisation approach is often based on the notion of capturing individual learning for the benefit of all members of the enterprises.
- Although the majority of respondents recognised the importance of training to their future competitiveness, most enterprises were only beginning to plan for substantial increase in training investment.
- Enterprises were taking an increasingly critical view of training and looking for a recognisable return on training investments. Thus training was being targeted on specific groups or individuals rather than delivered to all employees on a 'blanket' basis.
- Most training was sourced internally. External training providers were only used where specific expertise was lacking in the enterprise.
- TAFE was not used widely for enterprise training but was increasingly used to facilitate the growing demand for individualised training in enterprises.
- The adoption of NMPs had a significant positive effect on the extent of enterprise training. However, the links between training and organisational change were not direct. The key element in the process appeared to be the degree to which change was planned and played a role in the business strategy of the enterprise.

7 Discussion and conclusions

This project has examined the adoption of new management practices in Australian enterprises and the impact of their implementation on training arrangements. Much research has highlighted the crucial role of workplace change in transforming the nature and importance of training at the enterprise level. However, little of this research has focussed exclusively on the impact of organisational change on training. This research has usually relied on data generated from other studies to draw indirect conclusions on the role of training in organisational change and vice versa. This study is therefore unique, in that the focus of the research has been exclusively upon the relationship between organisational change and training at the enterprise level.

The research has confirmed some of the conclusions reached by earlier studies undertaken in Australia and overseas. However, it has also added depth and complexity to our understanding of the interaction of organisational change and training. As a result, a number of unexpected and new conclusions have emerged from the research.

Small business

A key finding from the research, which distinguishes it from most other studies in the area of enterprise training, is that size—number of employees—is not the most important determinant of the type or volume of training carried out in the organisation. The survey revealed that size was not positively correlated with any training practices except for the existence of a training manager. On the surface, this finding appears to run counter to the consistent findings of the ABS survey of training expenditure and training practices (ABS 1997a; 1997b) and other research carried out in the Australian context (Smith & Hayton 1999). However, as Smith and Hayton pointed out, size itself is unlikely to be the determinant of training arrangements within enterprises. Size acts as a proxy for other factors such as the level of resources that the organisation can devote to training and the diversity of skills required in the workforce. This research has been able to unpack the phenomenon of size in regard to organisational change. Thus, it is the adoption of NMPs such as TQM and teamworking in particular that have emerged as the most important explanatory factors for training.

This casts a new light on our understanding of training in small business. Traditional analyses of small business have relied on the generalised statistical data to suggest that small business does not invest in the training and development of its employees (McKenzie & Long 1996; Baker & Wooden 199). However, recent studies have suggested that the level of training activities that occur in small business are consistently understated by the statistical data which focusses on formal, structured training. It has been suggested that small business is quite committed to the training of employees but that in the absence of access to internal resources is compelled to find more innovative ways of training (Smith & Hayton 1999; Gibb 1998). The results from this research confirm this view of training in small business. Small businesses are high adopters of organisational change with TQM, teamworking and learning orientation more common in small- to medium-sized enterprises than in large enterprises. Given the strong positive correlation between the adoption of these NMPs and investment in training, it would appear that small business is likely to make significant investments in training. However, the infrastructure for internal training is not so well developed in small business. Smaller enterprises are less likely to support a training department or a training manager and less likely to produce a written training plan. Thus small business will tend to develop less formal and more innovative methods of training to ensure that the right skills are developed in the workforce.

The use of the VET system

An important finding from the research is that much training is sourced internally. Enterprises do not rely heavily on external training. The results of the survey show that external training is only moderately important and the telephone surveys confirmed that the majority of training is undertaken using internal resources. The incidence of workplace trainers/instructors is quite high, even in small- to medium-sized businesses and it would appear that these non-dedicated and part-time trainers are increasingly responsible for carrying out much of the training that occurs in Australian enterprises.

This emphasis on internal resourcing of training has significant implications for the VET system. Telephone interviews revealed a relatively high use of private training providers and consultants. However, private providers tended to be used only for certain specialised forms of training. These areas included sales and marketing training, management training and information technology training. Consultants were engaged to help in the process of organisational change but were often used only to start processes that were subsequently taken over by the enterprise. The use of TAFE by enterprises in both the surveys and the telephone interviews was quite low. TAFE was often regarded as inflexible and unresponsive to the immediate training needs of enterprises and not possessing the skills needed to supply the type of training that was required, particularly in relation to organisational change or technological innovation. However, many enterprises in the telephone survey highlighted the importance of TAFE for the training of individuals. Many enterprises encouraged their employees to undertake part-time study at TAFE as a form of reskilling or career development and were often willing to meet part of the costs of individuals undertaking professional development/reskilling courses at TAFE. This highlights an increasingly important role for TAFE as a major provider of adult retraining and professional development, in a time of frequent career change and an emphasis on the importance of lifelong learning.

This lack of engagement with the VET sector was further highlighted by the low use made of competency standards for training within enterprises. The survey revealed that the use of competency standards was the lowest of all the indicators of training practice in the sample. Thus, despite the effort that has been expended in the last 10 years in framing and establishing competency standards across industry, very little use is made of these standards within industry itself. Most of the training carried out at the enterprise level in Australian organisations is not based on competency standards and would, therefore, carry no recognition within the National Training Framework. This has significant implications for the portability and recognition of skills within the Australian workforce as a whole and makes attempts to estimate the stock of skills potentially a very difficult exercise indeed.

Importance of the individual

Previous studies (Smith & Hayton 1999) have highlighted the importance of the individual in driving the provision of training at the enterprise level. This study confirms this picture of the role of the individual in enterprise training. Many of the enterprises in the telephone survey sample were undertaking individual training needs analysis and/or introducing performance management systems that focussed on the development need of individuals. There was a distinct move away from traditional methods of training which imposed the same training programs on groups of employees or all employees. This 'one size fits all' approach was not seen to deliver the value that was required for the size of training investment it involved. Enterprises were increasingly concerned to focus their training activities so that they could achieve value for money and this process involved a shift towards individualised training programs. As discussed above, enterprises were willing to use the TAFE system to further the development of individual employees. Thus, not only are individuals becoming more important in driving the provision of training within enterprises, they are also increasingly the focus of much of the training investments that are being made.

Nature of training

The results from this research confirmed other studies of the general trend in enterprise training (Raper et al. 1997). The survey data suggests that training is becoming more formalised with a higher than expected incidence of written training plans and the use of

formal needs analysis processes to determine the training requirements of the enterprise. Responsibility for training is increasingly decentralised to line managers and the incidence of specialist training departments and training managers is quite low. At the same time there is high incidence of workplace trainers/instructors which suggests that training is being delivered primarily internally and by non-specialist training staff—perhaps part-time trainers who carry a range of other duties in the enterprise apart from their responsibilities for training. However, as discussed above, enterprise training is not linked to the National Training Framework. Competency standards are not being used to inform enterprise training and much of the training remains uncredentialled.

This raises the issue of the skills of workplace trainers/instructors. As recent research on the national assessors' and workplace trainers' competencies has shown, there is little formal training given to workplace trainers and little understanding at the enterprise level of the national competency standards. The apparent low level of accreditation or understanding of the national standards suggests that few workplace trainers/instructors have received much training in how to train and instruct. This raises serious concerns about the quality of enterprise training delivered by workplace trainers.

Importance of behavioural skills

Research in Australia and overseas has emphasised the growing importance of behavioural or generic skills for employers (Smith & Hayton 1999; Osterman 1995). The results of this survey show that behavioural skills are a major focus for training effort at the enterprise level and that many of the new management practices demand these skills from employees. The telephone interviews reinforced these conclusions with many employers citing skills such as problem solving, teamwork and adaptability as the most important skills on which to focus training. This suggests a shift in the nature of skills requirements at the enterprise level away from narrow technical skills and towards a new training paradigm that emphasises the need for developing broad sets of generic skills in the workforce in order to increase adaptability (Smith & Dowling 2001). This emphasis on the development of generic, behavioural skills may help to explain the low use of competency standards and the VET system on the part of employers. The focus of nationally accredited training has been on preparing people for specific jobs and occupations based on the competency standards developed on occupational lines. However, the competency standards focus on the technical skills required in a job or occupation. They rarely cover the broader, behavioural skills that employers seem to be seeking. As a result, the VET system is not well placed to deliver the kind of training that employers need. Thus, enterprises are compelled to provide the training themselves and, in so doing, do not turn to the VET system to meet their requirements.

Organisational change

Change processes at the enterprise level are difficult to classify as change tends to be continuous and customised. Most enterprises in the telephone survey had embarked on programs of organisational change some years previously but these programs had evolved over time and were continuing. Moreover, the nature of the change programs varied significantly from one enterprise to another. So, whilst enterprises could generally classify their change programs into one or other of the broad categories of NMP used in the research, in most cases the programs had been customised to fit the needs of particular enterprises.

The research has shown unambiguously that most NMPs are associated with higher levels of enterprise training. TQM, teamwork and learning orientation are all associated with higher levels of training activity and a greater diversity of training. Lean production, understood in most enterprises to be synonymous with cost reduction, is associated with the reduction of training activities. However, teamwork, the most prevalent of the NMPs investigated in this study, is associated with a more even distribution of training in the workforce and, where teams are given reasonable levels of autonomy, with more formalised and externally sourced training.

However, the important link to understand within enterprises in terms of training, is the link to business strategy. Whilst the adoption of NMPs (with the exception of lean production) had a positive impact on training, it was the link to the business strategy of the enterprise that proved to be the most powerful driver of training. Where training is linked to business

strategy both the volume and the quality and diversity of training provision increases. This suggests that organisational change will have most impact on training where it is undertaken in a planned and strategic way.

Training and organisational change

The literature on training and organisational change raises a number of issues which are illuminated in this study.

Firstly, the study has shown that workplace change is a major driver of improved training provision in enterprises. This confirms previous work in the area (Smith & Hayton 1999; ABS 1997b). With the exception of lean production all the NMPs were positively associated with a higher level of quantity and quality of training provision within enterprises.

The move towards training for behavioural skills noted in US and Australian research (Osterman 1995; Cappelli & Rogovsky 1994; Smith & Hayton 1999) is also confirmed by this study. The implementation of NMPs appears to demand few technical skills from employees but a major shift in attitudes and adaptability. To achieve these attitudinal shifts, enterprises have focussed their training on the generic, behavioural skills of problem solving, teamwork and communication.

Work arising from the MIT study of the international automotive industry has suggested that innovations in workforce management rarely succeed in isolation. Change has to be accompanied by other changes in the human resources policies of the enterprise so that a self-reinforcing group or 'bundle' of HR practices is put into practice which can succeed at changing employee behaviour. Training has been cited as an important element of these HR bundles (MacDuffie 1995; MacDuffie & Kochan 1995; Dyer & Reeves 1995). However, this study has confirmed earlier work carried out in Australia that shows that improvements in training can often be successfully implemented without reference to other HR practices (Smith 1997). The survey showed that whilst the implementation of a human resources strategy had an impact on the provision of training, notably on the numbers of employees who received training and the extent of training for behavioural skills, the impact of human resource strategies was far less than the impact of building training into the strategic planning processes of the enterprise. This was confirmed by the telephone interviews which revealed that few enterprises had put in place further HR innovations to accompany a renewed emphasis on training. The principal exception to this was the increasing use of performance management systems which were having a significant effect on the provision of training at an individual level.

Finally, the study has confirmed that much training for organisational change is sourced internally. This is a very important finding as it has ramifications for the relationship of enterprises to the national VET system.

Policy implications

There are a number of clear lessons and policy implications that arise from this discussion of the findings from the study.

The disengagement of enterprises from the VET system in terms of the use of national competency standards, accredited training and TAFE is a source of major concern. The study has highlighted how many organisations do not see the value of accredited training or the TAFE system in meeting their most pressing training needs. A national training system that is based on the development of technical job skills predicated on the use of national competency standards, appears to hold little attraction for enterprises that wish to develop the generic behavioural skills of their employees and more concerned with attitudes and adaptability than with technical job competence.

Small business should not be dismissed as uncaring or unconcerned about the training and development of their employees. Smaller enterprises often have a very clear perception of the skills needs of their employees but, lacking the training infrastructure associated with larger enterprises, have been compelled to develop more innovative and less formal means of meeting those skills requirements.

The increasing individualisation of training has highlighted a key role performed by the TAFE system. It is already well known that 80% of TAFE clients are adults undergoing some form of professional development or retraining. The study shows that enterprises are keen to take advantage of TAFE's capacity to reskill and develop existing employees and are willing to sponsor individual employees to undertake this form of training. This focus on reskilling and professional development of the existing work force, represents a major way in which the VET system can reconnect to disaffected employers, and underscore the importance of giving individual accredited training that enhances their utility to the enterprise and improves individual marketability, in a labour market where jobs can no longer be guaranteed for life.

The notion of individualisation raises the issue of entitlement to training. If the individualisation of training progresses, then the emphasis will move away from training at the enterprise level to training at the individual level, and this move will bring into focus national policy on the entitlements of individual workers to training and retraining, throughout their careers.

The study has confirmed that, despite the fear evoked by the apparent downturn in employer expenditure on training (ABS 1997a) in recent years, there is a lot of training happening in Australian enterprises. Enterprises in the survey sample (biased to larger enterprises) were spending on average 4.3% of payroll on training in 1997–98. The telephone interviews revealed a less consistent pattern but most enterprises were undertaking training of some form for their employees. However, the type and quality of the training being provided in Australian enterprises is questionable. The decentralisation of training and the extensive role now being played by untrained workplace trainers raises the question of whether enterprises are getting the most from their extensive training investments. There may be an important emerging role for training providers in acting as consultants to enterprises, to ensure that they reap the full benefits of their training investments, by ensuring the quality of the training process at the enterprise level.

Workplace change is a major driver of enterprise training. The pace of change in Australian workplaces shows no sign of slackening (ACIRRT 1999) and this study has confirmed the evolutionary and continuous nature of change. In the future this can only lead to an increasing demand for training. The policy question is not so much how to encourage employers to invest more in training so much as how to ensure that the training that is taking place delivers the best possible outcomes for enterprises, individuals and the country at large.

References

Abrahamson, E 1991, 'Managerial fads and fashions: The diffusion and rejection of innovations', *Academy of Management Review*, vol.16, no.3, pp.586–612.

—— 1996, 'Management fashion', *Academy of Management Review*, vol.21, no.1, pp.254–85.

—— 1997, 'The emergence and prevalence of employee management rhetorics: The effects of long waves, labor unions and turnover', *Academy of Management Review*, vol.40, no.3, pp.491–533.

ABS (Australian Bureau of Statistics) 1994, *Employer training practices, Australia*, catalogue no. 6356.0, AGPS, Canberra.

—— 1996, *Innovation in selected Australian industries*, catalogue no. 8118.0, AGPS, Canberra.

—— 1997a, *Employer training expenditure, Australia, July to September 1996*, AGPS, Canberra.

—— 1997b, *Employer training practices, Australia*, catalogue no. 6356.0, AGPS, Canberra.

ACIRRT (Australian Centre for Industrial Relations Research and Teaching) 1999, *Australia at work: Just managing?*, Prentice Hall, Sydney.

Adler, P & Cole, R 1993, 'Designed for learning: A tale of two auto plants', *Sloan Management Review*, Spring, pp.85–94.

Appelbaum, E & Batt, R 1994, *The new American workplace: Transforming work systems in the United States*, Cornell University Press, Ithaca.

Argyris, C & Schon, D 1976, *Organizational learning*, Addison-Wesley, Reading, Mass.

Armstrong, JS & Overton, TS 1977, 'Estimating nonresponse bias in mail surveys', *Journal of Marketing Research*, vol.14, pp.396–402.

Auer, P & Riegler C 1990, *Post-Taylorism: The enterprise as a place of learning organizational change*, Swedish Work Environment Fund and WZB, Sweden.

Baker, M & Wooden, M 1996, 'Training in the Australian labour market: Evidence from the How Workers Get Their Training Survey', *Australian Bulletin of Labour*, vol.18, pp.25–45.

Banker, RD, Field, JM, Schroeder, RG & Sinha, KK 1996, 'Impact of work teams on manufacturing performance: A longitudinal field study', *Academy of Management Journal*, vol.39, no.4, pp.867–90.

Barley, SR & Kunda, G 1992, 'Design and devotion: Surges of rational and normative ideologies of control in managerial discourse', *Administrative Science Quarterly*, vol.37, no.3, pp.363–99.

Barney, J 1991, 'Firm resources and sustained competitive advantage', *Journal of Management*, vol.17, no.7, pp.99–120.

Beer, M, Spector, B, Lawrence, PR, Quinn Mills, D & Walton, RE 1984, *Managing human assets*, Free Press, New York.

Bertalanffy, L von 1968, 'General systems theory: Foundations, developments, applications', *Brazillier*, New York.

Berggren, C, Adler, Paul S & Cole, Robert E 1994, 'NUMMI vs. Uddevalla: Rejoinder', *Sloan Management Review*, vol.35, no.2, pp.37–49.

Braverman, H 1974, 'Labor and monopoly capitalism: The degradation of work in the twentieth century', *Monthly Review Press*, New York.

Brown, C, Reich, M, & Stern, D 1993, 'Becoming a high-performance work organisation: The role of security, employee involvement and training', *International Journal of Human Resource Management*, vol.4, no.2, pp.247–75.

Cappelli, P & Rogovsky, N 1994, 'New work systems and skill requirements', *International Labour Review*, vol.133, no.2, pp.205–20.

Conti, RF & Warner, M 1994, 'Taylorism, teams and technology in re-engineering work-organization', *New Technology Work & Employment*, vol.9, no.2, pp.93–102.

Child, J 1984, *Organisation: A guide to problems and practice (2nd edn)*, Harper and Row, London.

Dean, JW Jr, Snell, SA 1991, 'Integrated manufacturing and job design: Moderating effects of organizational inertia', *Academy of Management Journal*, vol.34, no.4, pp.776–804.

Delbridge, R 2000, 'Teams in contemporary manufacturing: Some recent research findings and pressing problems', in *Teamworking: Some international perspectives*, eds R Park, R Harris & E Collins, Post Pressed, Flaxton.

Deming, WE 1982, *Out of the crisis*, MIT Center for Advanced Engineering Studies, Cambridge, Mass.
Department of Industry, Science and Technology 1996, *Australian business innovation: A strategic analysis*, AGPS, Canberra.
DiMaggio, P & Powell, WW 1983, 'The iron cage re-visited: Institutional isomorphism and collective rationality in organizational fields', *American Sociological Review*, no.48, pp.147–60.
Drago, R 1996, 'Workplace transformation and the disposable workplace: Employee involvement in Australia', *Industrial Relations*, vol.35, no.4, pp.526–43.
Dyer, L & Kochan, TA 1995, 'Is there a new HRM? Contemporary evidence and future directions' in *Managing human resources in the 1990s and beyond: Is the workplace being transformed?*, eds BM Downie & ML Coates, IRC Press, Queens University, Ontario.
Dyer, L & Reeves, T 1995, 'Human resource strategies and firm performance: What do we know and where do we need to go?', *International Journal of Human Resource Management*, vol.6, no.3, pp.656–70.
Fiol, CM & Lyles, MA 1985, 'Organizational learning', *Academy of Management Review*, vol.10, no.4, pp.803–13.
Flynn, BB, Sakakibara, S & Schroeder, RG 1995, 'Relationship between JIT and TQM: Practices and performance', *Academy of Management Journal*, vol.38, no.5, pp.1325–60.
Fombrun, CJ, Tichy, NM & Devanna, MA 1984, *Strategic human resource management*, John Wiley, New York.
Gibb J 1998, 'As they like it', *Australian Training Review*, no.28, Sept/Oct/Nov, pp.26–9.
Gill, J & Whittle, S 1992, 'Management by panacea: Accounting for transience', *Journal of Management Studies*, vol.30, pp.281–95.
Guest, DE 1987, 'Human resource management and industrial relations', *Journal of Management Studies*, vol.24, no.5, pp.503–21.
Hamel, G & Prahalad, CK 1990, 'The core competence of the corporation', *Harvard Business Review*, May–June, pp.79–91.
Hammer, M & Champy, J 1993, *Re-engineering the corporation: A manifesto for business revolution*, Nicholas Brearley, London.
Heyes, JA 1996, 'Formula for success? Training, reward and commitment in a chemicals plant', *British Journal of Industrial Relations*, vol.34, no.3, pp.351–69.
Heyes, J & Stuart, M 1998, 'Bargaining for skills: Trade unions and training at the workplace', *British Journal of Industrial Relations*, vol.36, no.3, pp.459–67.
Hilmer, F & Donaldson, L 1996, *Management redeemed: Debunking the fads that undermine corporate performance*, Free Press, New York.
Ichniowski, C, Kochan, TA, Levine, D, Olson, C & Strauss, G 1996, 'What works at work: Overview and assessment', *Industrial Relations*, vol.35, no.3, pp.299–333.
Juran, JM 1962, *Quality control handbook*, McGraw Hill, New York.
Kabst, R, Larsen, HH & Bramming, P 1996, 'How do lean management organizations behave regarding training and development?', *International Journal of Human Resource Management*, vol.7, no.3, pp.618–39.
Kamoche, K 1996, 'Strategic human resource management within a resource-capability view of the firm', *Journal of Management Studies*, vol.33, no.2, pp.213–33.
Kieser, A 1997, 'Rhetoric and myth in management fashion', *Organization*, vol.4, no.1, pp.49–74.
Kim, D 1993, 'The link between individual and organizational learning', *Sloan Management Review*, Fall, pp.37–50.
Kochan, TA & Osterman, P 1994, *The mutual gains enterprise*, Harvard Business School Press, Boston, Mass.
Kondratieff, ND 1935, 'The longwaves in economic life', *Review of Economics and Statistics*, vol.17, pp.105–15.
Lawler, EE 1986, *High involvement management: Participative strategies for improving organisational performance*, Jossey-Bass, San Francisico.
Legge, K 1995, *Human resource management: Rhetorics and realities*, Macmillan, London.
Littler, CR, Bramble, T & Dunford, R 1997, 'The dynamics of downsizing in Australia and New Zealand', *Asia-Pacific Journal of Human Resources*, vol.35, no.1, pp.65–79.
McCabe, D 1996, 'Best laid schemes o' TQM', *New Technology, Work and Employment*, vol.11, no.1, pp.28–38.
McKenzie, P & Long, D 1996, *Educational attainment and participation in training*, working paper no.4, Centre for the Economics of Education, Monash University, Melbourne.
MacDuffie, JP 1995, 'Human resource bundles and manufacturing performance: Flexible production systems in the world auto industry', *Industrial and Labor Relations Review*, vol.48, no.2, pp.197–221.

MacDuffie, JP & Kochan, TA 1995, 'Do US firms invest less in human resources? Training in the world auto industry', *Industrial Relations*, vol.34, no.2, pp.147–68.
Marsick, VJ & Watkins, KE 1990, *Informal and incidental learning in the workplace*, Routledge, London.
Mathews, J 1994, *Catching the wave*, Allen and Unwin, Sydney.
Mayo, E 1945, *The social problems of an industrial civilization*, Harvard University Press, Cambridge, Mass.
Morehead, A, Steele, M, Alexander, M, Stephen, K & Duffin, L 1997, *Changes at work: The 1995 Australian Workplace Industrial Relations Survey*, Longman, Melbourne.
Mumford E & Hendricks, R 1996, 'Business process re-engineering RIP', *Personnel Management*, vol.2, no.9, pp.22–9.
Naver, J & Slater, S 1990, 'The effect of market orientation on business profitability', *Journal of Marketing*, vol.54, pp.20–35.
NCVER (National Centre for Vocational Education Research) 1997, *The national research and evaluation strategy for vocational education and training in Australia 1997–2000*, NCVER, Adelaide.
OECD (Organisation for Economic Cooperation Development) 1994, *The OECD jobs study: Evidence and explanations*, OECD, Paris.
Osterman, P 1994, 'How common is workplace transformation and who adopts it?', *Industrial and Labor Relations Review*, vol.47, no.2, pp.173–88.
—— 1995, 'Skill, training, and work organization in American establishments', *Industrial Relations*, vol.34, no.2, pp.125–46.
Ouchi, W 1981, *Theory Z*, Addison-Wesley, Reading, Mass.
Pfeffer, J 1994, *Competitive advantage through people*, Harvard Business School Press, Boston, Mass.
Piore, M & Sabel, C 1984, *The second industrial divide*, Basic Books, New York.
Rainbird, H 1994, 'Continuing training' in *Personnel management* (2nd edn), ed. K Sisson, Basil Blackwell, Oxford.
Raper, P, Ashton, D, Felstead, A & Storey, J 1997, 'Toward the learning organisation? Explaining current trends in training practice in the UK', *International Journal of Training and Development*, vol.1, no.1, pp.9–21.
Rogers, EM 1983, *Diffusion of innovations*, Free Press, New York.
Senge, PM 1990, *The fifth discipline: The art and practice of the learning organization*, Random House, New York.
Shaiken, H, Lopez, S & Mankita, I 1997, 'Two routes to team production: Saturn and Chrysler compared', *Industrial Relations*, vol.36, no.1, pp.17–45.
Shapiro, EC 1995, *Fad surfing in the boardroom: Reclaiming the courage to manage in the age of instant answers*, Addison-Wesley, New York.
Sinkula, JM, Baker, WE, & Noordewier, T 1997, 'A framework for market-based organizational learning: Linking values, knowledge, and behaviour', *Journal of the Academy of Marketing Science*, vol.25, pp.305–18.
Sitkin, SB, Sutcliffe, KM & Schroeder, RG 1994, 'Distinguishing control from learning in total quality management: A contingency perspective', *Academy of Management Review*, vol.19, no.3, pp.537–64.
Smith, A 1997, 'Developing a model of enterprise training: A study of the factors which influence training decision-making in Australian enterprises', unpublished PhD thesis, University of Tasmania.
Smith, A & Dowling, P 2001, 'Analyzing firm training: Five propositions for future research', *Human Resource Development Quarterly*, vol.12, no.2, pp.147–68.
Smith, A & Hayton, G 1999, 'What drives enterprise training? Some evidence from Australia', *International Journal of Human Resource Management*, pp.251–72.
Snell, SA, & Dean, JW Jr 1992, 'Integrated manufacturing and human resource management: A human capital perspective', *Academy of Management Journal*, vol.35, no.3, pp.467–504.
Stewart, P & Garrahan, P 1995, 'Employee responses to new management techniques in the auto industry', *Work, Employment and Society*, vol.9, no.3, pp.517–36.
Stuart, M 1996, 'The industrial relations of training: A reconsideration of training arrangements', *Industrial Relations Journal*, vol.27, no.3, pp.253–65.
Taylor, FW 1911, *The principles of scientific management*, Harper and Row, New York.
Thompson, P, Wallace, T, Flecker, J & Ahlstrand, R 1995, 'It ain't what you do, it's the way that you do it: Organisation and skill utilisation in commercial vehicles', *Work, Employment and Society*, vol.9, no.4, pp.719–42.
Trist, EL 1963, *Organizational choice*, Tavistock, London.
Walton, RE 1985, 'From control to commitment in the workplace', *Harvard Business Review*, vol.63, no.2, March–April.

Webb, J 1996, 'Vocabularies of motive and the new management', *Work, Employment and Society*, vol.10, no.2, pp.251–71.
Weisbord, MR 1984, 'The organization development contract revisited', *Organisationsentwicklung*, no.4, pp.15–26.
Wilkinson, B 1983, *The shopfloor politics of new technology*, Heinemann, London.
Wilmott, H 1995, 'The odd couple? Re-engineering business processes; managing human relations', *New Technology, Work and Employment*, vol.10, no.2, pp.89–98.
Womack, J, Jones, D & Roos, D 1990, *The machine that changed the world*, Rawson-Macmillan, New York.
Womack, JP & Jones, DT 1994, 'From lean production to the lean enterprise', *Harvard Business Review*, vol.72, no.2, pp.93–103.
Wright, PM & McMahan, GC 1992, 'Theoretical perspectives for strategic human resource management', *Journal of Management*, vol.18, no.2, pp.295–320.
Youndt, MA, Snell, SA, Dean, JW & Lepak, D 1996, 'Human resource management, manufacturing, and firm performance', *Academy of Management Journal*, vol.39, pp.836–66.

Appendices

A Survey questionnaires

B Statistical analysis of training and explanatory measures

C Statistical analysis of models of training activity

D Explanatory variables

E Modelling results

Section 1: Management Practices and Philosophies

The following statements pertain to current management practices/philosophies in your organisation. Using the following response scale, place the most appropriate number in the blank space to the left of each statement. Please respond to each statement.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

MPP1 Managers basically agree that our organisation's ability to learn is the key to our competitive advantage.

MPP2 The basic values of this organisation include learning as a key improvement.

MPP3 The sense around this organisation is that employee learning is an investment, not an expense.

MPP4 Learning in my organisation is seen as a key commodity necessary to guarantee organisational survival.

MPP5 Employees in this organisation realise that the way they perceive the marketplace must be continually questioned.

MPP6 We reflect critically on the shared assumptions we have made about our customers.

MPP7 We rarely collectively question our biases about the way we interpret customer information.

MPP8 There is a commonality of purpose in my organisation.

MPP9 There is total agreement on our organisational vision across all levels, functions and divisions.

MPP10 All employees are committed to the goals of this organisation.

MPP11 Employees view themselves as partners in charting the direction of the organisation.

MPP12 We regularly gather data on our customers' views on quality.

MPP13 Senior managers display visible and effective leadership on quality in this organisation.

MPP14 We emphasise prevention rather than inspection in our approach to quality.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

MPP15 Everyone in this organisation understands their role in quality.

MPP16 We systematically collect data on all aspects of our quality performance.

MPP17 Setting up cross-functional problem solving tasks is a part of our approach to quality.

MPP18 Employees take responsibility for making improvements in their jobs.

MPP19 Continuous improvement is a key element in our approach to quality.

MPP20 Every employee knows who his or her customer is and ensures that they get a quality product/service.

MPP21 We have a formal program in this organisation for the improvement of quality.

MPP22 Information on quality performance is readily available to employees.

MPP23 Information on productivity is readily available to employees.

MPP24 All major department heads within our organisation accept their responsibility for quality.

MPP25 Managers provide personal leadership for quality products and quality improvement.

MPP26 Management is primarily concerned with short-range financial performance.

MPP27 We strive to establish long-term relationships with suppliers.

MPP28 Our suppliers are actively involved in our new product development process.

MPP29 Quality is our number one criterion in selecting suppliers.

MPP30 We rely on a small number of high quality suppliers.

MPP31 Our suppliers are certified, or qualified, for quality.

MPP32 We run this organisation as lean as possible in terms of staffing.

MPP33 Our employees routinely carry out a wide variety of tasks.

COPY AVAILABLE

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

MPP34 We focus on what should be rather than what is.

MPP35 Rather than making superficial changes we throw away the old.

MPP36 Our organisation invents completely new ways of accomplishing work.

MPP37 We seek to achieve quantum leaps in performance.

MPP38 We are about making marginal or incremental improvements to performance.

MPP39 We take nothing for granted.

MPP40 Our organisation aims for major breakthroughs.

MPP41 We increase our own competitiveness by improving quality, service and speed.

MPP42 Our organisation focusses on end results and objectives.

MPP43 We have recently re-engineered our major processes.

Section 2: Work-teams

Approximately, what percentage of your non-managerial workforce is organised into work-teams (of 20 people or less). WT1 % If 0 % (work-teams are not used) please go to section 3 ➪

How many members usually make-up a work-team at your workplace? WT2

Are employees in work-teams rotated between tasks within the team? WT3 (Yes or No)

How frequently are employees in work-teams rotated between tasks within the team?

Once every WT4 hours OR Once every WT5 days

Place the most appropriate number from the scale in the blank space to the left of each statement.

Not At All			Moderate Extent			Great Extent
1	2	3	4	5	6	7

To what extent are work-teams at your workplace managed in the following manner?

WT6 Several teams are managed at the same time by a supervisor appointed by the company.

WT7 Each team is managed by a team leader who is appointed by the company.

WT8 Each team is managed by a team leader appointed by members of the team.

WT9 Work-team members work independently from each other on tasks.

To what extent do employees in teams at your workplace have responsibility for the following tasks?

WT10 planning and organising ***what*** work tasks need to be undertaken.

WT11 planning and organising ***how*** work tasks need to be undertaken.

WT12 planning and organising ***when*** work tasks need to be undertaken.

WT13 solving process or quality problems.

WT14 scheduling breaks and lunch periods.

WT15 ordering and receiving goods or raw materials.

WT16 establishing production work targets and monitoring their performance.

WT17 establishing budgets and monitoring their performance against these budgets.

WT18 interviewing new team members for selection onto teams.

WT19 training and development of new team members.

WT20 terminating the employment of individual team members.

BEST COPY AVAILABLE

Section 3: Human Resource Practices

The following statements pertain to the role of human resource managers in your organisation. Using the following response scale, place the most appropriate number in the blank space to the left of each statement. Please respond to each statement.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

HRP1 Human resource specialists are responsible for co-ordinating the management of change.

HRP2 Strategic planning consciously takes into account human resources and employee relations issues.

HRP3 Human resource plans consciously seek to co-ordinate and integrate the various HR/personnel functions.

HRP4 Clear, written selection criteria are always used when hiring non-managerial employees.

HRP5 Skills are the most important hiring criteria.

HRP6 When hiring non-managerial employees, technical skills are given more weight than interpersonal skills.

HRP7 Non-managerial employee performance is measured against established core competencies.

HRP8 Non-managerial employee performance is measured against clear performance standards such as 'key performance indicators' or 'key responsibility areas'.

HRP9 The organisation accepts responsibility for personal and family well-being of employees.

HRP10 Our organisation pays employees more than comparable workers elsewhere.

HRP11 In the last three years, our organisation has implemented a large scale program of retrenchment.

Section 4: Business Environment

Use the seven-point scale below to indicate your perception of the BUSINESS ENVIRONMENT in which your organisation operates with regard to your principal served market segment (PSMS).

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

BE1	In our kind of business, customers' product preferences change quite a bit over time.
BE2	Our customers tend to look for new products and services all the time.
BE3	We are witnessing demand for our products and services from customers who never bought them before.
BE4	New customers tend to have product-related needs that are different from those of our existing customers.
BE5	We cater for many of the same customers that we used to in the past.
BE6	Competition in our industry is cut-throat.
BE7	There are many 'promotion wars' in our industry.
BE8	Anything that one competitor can offer, others can match readily.
BE9	Price competition is the hallmark of our industry.
BE10	One hears of a new competitor almost every day.
BE11	Our competitors are relatively weak.
BE12	The technology in our industry is changing rapidly.
BE13	Technological changes provide big opportunities in our industry.
BE14	A large number of new product ideas have been made possible through technological breakthroughs in our industry.
BE15	Technological developments in our industry are rather minor.

Section 5: Training Practices and Environment

The following statements pertain to current training and related practices in your organisation.*

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

TPE1 In our organisation the business strategy has been formally developed and successfully implemented over a number of years.

TPE2 In our organisation the business strategy has gradually emerged as the organisation has developed over time.

TPE3 In our organisation the business strategy has been recently developed but not yet fully implemented.

TPE4 In our organisation the business strategy has never been developed.

TPE5 In our organisation the training plan is closely based on the business strategy.

TPE6 In our organisation the training plan is loosely based on the business strategy.

TPE7 In our organisation the training plan has little or no relationship to the business strategy.

TPE8 It is extremely difficult to use the skills required for our jobs elsewhere.

TPE9 Our workers are extremely highly skilled.

TPE10 Training is very important to the future competitiveness of our organisation.

TPE11 We never analyse our training needs using a formal training needs analysis.

What percentage of training activities is devoted to each of the following groups of employees?

Professional	*TPE12*	*Full-time*	*TPE16*
Managers	*TPE13*	*Permanent Part-time*	*TPE17*
Technical/Trades	*TPE14*	*Casual*	*TPE18*
Operational/Shop Floor	*TPE15*	*Contractors*	*TPE19*
Total	*100%*	*Total*	*100%*

BEST COPY AVAILABLE

* Training is defined as: 'a structured program of instruction or closely supervised practice whose purpose is to develop, maintain or improve employment-related skills of employees'.

Using the following response scale, place the most appropriate number in the blank space to the left of each statement. Please respond to each statement.

Not At All			Moderate Extent			Great Extent
1	2	3	4	5	6	7

To what extent does your organisation use training provided by:

TPE20 TAFE colleges

TPE21 universities

TPE22 private training providers

TPE23 industry associations

TPE24 equipment suppliers

TPE25 external short courses

To what extent do you provide the following training:

TPE26 formal induction training

TPE27 formal management training courses

TPE28 mentoring

TPE29 off-the-job training for apprentices/trainees

TPE30 coaching

TPE31 formal courses for technical/professional staff

TPE32 structured job rotation

TPE33 on-the-job training for operational staff

TPE34 off-the-job training courses for operational staff

To what extent does training at your organisation focus upon:

TPE35 teamwork

TPE36 communication skills

TPE37 interpersonal skills

TPE38 problem solving skills

TPE39 technical skills

TPE40 job-specific skills

TPE41 customer service skills

TPE42 quality skills

TPE43 leadership skills

TPE44 coaching/mentoring skills

BEST COPY AVAILABLE

Not At All			Moderate Extent			Great Extent
1	2	3	4	5	6	7

To what extent is training in your organisation:

TPE45 based on national competency standards

TPE46 based on enterprise competency standards

TPE47 accredited by state/national accreditation bodies

TPE48 delivered in the workplace

TPE49 delivered by in-house staff

TPE50 based on the use of mentoring and/or coaching

TPE51 delivered primarily on-the-job

TPE52 devolved as a responsibility to line management

For the following questions, write Yes (Y) or No (N) in the blank space next to each question?

Does your organisation have:

a written training plan	TPE53	a training budget	TPE54
registration as a training provider	TPE55	a specialist training department	TPE56
a training manager	TPE57	workplace trainers/instructors	TPE58
a scheme to reimburse course fees for external courses	TPE59		
a human resources officer who arranges training	TPE60		

For the following questions, write the most appropriate percentage (e.g. 60%) in the blank space to the left of each question?

TPE61 What percentage of payroll was spent on training in the 1996/97 financial year?

TPE62 What percentage of payroll do you expect to spend on training in the 1997/98 financial year?

TPE63 What percentage of your paid employees have been involved in training in the past year?

TPE64 What percentage of training is provided by external training providers (TAFE, private providers etc)?

TPE65 What percentage of training is provided by in-house staff?

BEST COPY AVAILABLE

Section 6: Nature of Organisation

How many employees does your **entire** organisation have in Australia? NOO1

How many employees does your organisation (area of responsibility) have? NOO2

How many employees are employed in the training department for which you are responsible? NOO3

What percentage of your workforce is unionised? NOO4%

What percentage of employees in your area of responsibility for which you administer HRM policies, fall into the following classifications?

Professional	*NOO5*	*Full-time*	*NOO9*	*Female*	*NOO13*
Managers	*NOO6*	*Permanent Part-time*	*NOO10*	*Male*	*NOO14*
Technical/Trades	*NOO7*	*Casual*	*NOO11*		
Operational/Shop Floor	*NOO8*	*Contractors*	*NOO12*		
Total	***100%***	***Total***	***100%***	***Total***	***100%***

Which following description best describes your industry type? (√ single best response)

( ) food & beverage manufacturing, ( ) machinery & equipment manufacturing

( ) construction, ( ) finance & insurance, ( ) retail trade,

( ) agriculture, forestry and fishing, ( ) mining, ( ) other manufacturing,

( ) wholesale trade, ( ) transport & storage, ( ) property & business services,

( ) other, specify: _____

Which following description best describes your organisation's ownership structure? NOO17

( ) Foreign-based multinational, ( ) Australian based multinational, ( ) Australian national.

Is your organisation: ( ) privately owned, ( ) publicly listed, ( ) other NOO18

What is your job title: _____

Appendix B: Statistical analysis of training and explanatory measures

In this appendix the results from the measurement models are presented. CFA is employed to refine measures. In developing and refining the initially proposed scales, various criteria were employed to facilitate the identification of the preferred specifications. These criteria included: goodness of fit as measured by the robust CFI; composite reliability (based on factor loadings); the size of factor loadings; and the size of estimated residuals from models. Given the effort made in collecting a large amount of information we erred on including too many rather than too few items in scales.

The CFA results for the training measures are presented in table B1 and for the explanatory training drivers in table B2. CFI statistics are only meaningful and presented for over-identified models with four or more items. For all measures, CFI statistics are over the accepted 0.90 level. All standardised factor loadings exceed 0.3 and reliabilities range from 0.57 to 0.95. In general, results appear to indicate that the employed measures are statistically acceptable.

Table B1: Confirmatory factor analysis for training measures

EXT		VET		FORM		BEHAVE	
Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings
TPE21	0.323	TPE20	0.371	TPE11	0.418	TPE35	0.768
TPE22	0.532	TPE45	0.879	TPE26	0.494	TPE36	0.852
TPE23	0.446	TPE46	0.599	TPE27	0.644	TPE37	0.806
TPE24	0.702	TPE47	0.682	TPE29	0.490	TPE38	0.761
				TPE31	0.625	TPE41	0.674
				TPE34	0.684	TPE42	0.571
				TPE37	0.399		
CFI	1.000	*CFI*	1.000	*CFI*	0.943	*CFI*	0.944
REL	0.579	*REL*	0.739	*REL*	0.742	*REL*	0.880

WORK		COACH		DECENT	
Items	Loadings	Items	Loadings	Items	Loadings
TPE32	0.361	TPE28	0.836	TPE48	0.707
TPE33	0.834	TPE30	0.765	TPE49r	0.859
TPE48	0.458	TPE50	0.813	TPE52	0.357
REL	0.582	*REL*	0.847	*REL*	0.693

CFI denotes the robust comparative fit index. *REL* denotes the composite reliability.

r = denotes reverse coded.

Table B2: Confirmatory factor analysis for explanatory variables

LO		TQM		LP		BPR		WA	
Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings
MPP1	0.774	MPP13	0.737	MPP22	0.822	MPP34	0.494	WT10	0.905
MPP2	0.834	MPP14	0.755	MPP23	0.843	MPP35	0.612	WT11	0.942*
MPP3	0.811	MPP15	0.827*	MPP24	0.904	MPP36	0.729	WT12	0.902
MPP4	0.866*	MPP18	0.654	MPP25	0.900*	MPP37	0.750*	WT13	0.914
MPP5	0.785	MPP19	0.787	MPP28	0.539	MPP40	0.715	WT14	0.751
MPP6	0.747	MPP20	0.580	MPP29	0.756	MPP42	0.508	WT15	0.768
MPP8	0.759	MPP21	0.603	MPP30	0.644	MPP43	0.515	WT16	0.817
MPP9	0.756			MPP31	0.690			WT18	0.645
MPP10	0.859			MPP32	0.661			WT19	0.789
MPP11	0.794			MPP33	0.703				
CFI	0.970	*CFI*	0.937	*CFI*	0.971	*CFI*	0.961	*CFI*	0.973
REL	0.946	*REL*	0.876	*REL*	0.928	*REL*	0.815	*REL*	0.952

TPS		MT		CI		TT		HRS	
Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings
TPE5	0.834*	BE1	0.799	BE6	0.742*	BE12	0.793	HRP1*	-
TPE7r	0.628	BE2	0.882*	BE7	0.648	BE13	0.847*	HPR2	-
TPE10	0.373	BE3	0.488	BE8	0.646	BE14	0.798	*REL*	0.577
		BE4	0.370	BE9	0.703	BE15r	0.751	**HRP**	
				BE10	0.577			HRP7*	-
		CFI	0.953	*CFI*	0.960	*CFI*	0.985	HRP8	-
REL	0.655	*REL*	0.745	*REL*	0.797	*REL*	0.875	*REL*	0.717

CFI denotes the robust comparative fit index. *REL* denotes the composite reliability.

* denotes the scaling item for regressions.

Appendix C: Statistical analysis of models of training activity

In this appendix, we first describe the estimation procedures employed to estimate the models and then present the estimates. It is important to recognise that the standard regression model or logit model are not appropriate procedures to estimate models when independent variables are measured with error. Effectively, standard estimates are inconsistent given measurement error in regressors. In operationalising various constructs such as the NMP variables, scales are employed, these can only measure the underlying construct with error. To overcome this problem a 2SLS procedure for estimating latent variable models developed by Bollen[1] (1996) is employed for the quantitative training measures. For the dichotomous training variables we combine the probit GMM estimator and Bollen's procedure, for consistent parameter estimation given a binary dependent variable.

Simply put, the Bollen 2SLS procedure amounts to choosing a single scaling item as the regressor for each construct which enters as an independent variable. The remaining items in that scale become instruments. The specific scaling items used in this study are identified in table B2. The scaling items were chosen by finding the best fitting regression between an item and the remaining items in the scale. All R^2s from these regressions were acceptably high (ranging from 0.31 to 0.69) indicating that the instruments appear to adequately correlate with the chosen scaling items.

Measurement error in the dependent variable poses no problems in the standard regression framework as it is captured by the regression error term. In our case, we employ regression factor scores for the dependent training measures based on multi-items and CFA. This makes use of all scale and factor loading information in measuring the dependent variable.

Given that there is significant size variability in our data set, then the problem of heteroscedasticity is likely to contaminate regression results, leading to biased statistical tests. As a consequence, all the estimated test statistics in the tables below are heteroscedastic, corrected by employing White's heteroscedastic consistent covariance matrix procedure. All computations were performed using LIMDEP.

Tables C1 through to C16 present the preferred estimates. The presented p-values measure the statistical importance of each individual variable. For most models we only include variables which were significant at a 5% level or better (p-value < 0.05). The overall goodness-of-fit measures are the generalised R^2 for 2SLS models, and the squared correlation coefficient between observed and predicted values for the probit GMM models. The goodness-of-fit tests are chi-square tests of the joint significance of all independent variables. In all cases, these goodness-of-fit tests indicate the existence of significant relationships at the 1% level of significance. At the bottom of each table the p-value from attempting to re-enter an omitted NMP variable is presented. In all cases, previously omitted NMP variables were insignificant at 10% levels and therefore could not be justifiably re-admitted into the preferred models. Moreover, the attempted re-inclusion of NMP variables did not seriously affect the individual significance of the retained variables.

[1] Bollen, KA 1996, 'An alternative 2SLS estimator for latent variable models', *Psychometrika*, vol.61, pp.109–21.

Table C1: 2SLS regression results for PAY97

Variable	Coefficient	t-statistic	p-value
Constant	-3.668	-2.03	0.042
Learning orientation	0.522	2.28	0.022
Human resource performance	0.707	2.58	0.010
Technological turbulence	0.385	1.97	0.049
Employee size	0.00067	1.26	0.209

Goodness of fit $R^2 = 0.079$ $\chi^2(4) = 18.43$

Omitted NMP variables

	p-value		p-value		p-value
TQM	0.278	LP	0.358	BPR	0.676
WA	0.951	TEAMS	0.135		

Table C2: 2SLS regression results for PAY98

Variable	Coefficient	t-statistic	p-value
Constant	-5.364	-2.42	0.015
Learning orientation	0.604	2.18	0.029
Human resource performance	0.950	2.73	0.006
Technological turbulence	0.546	2.22	0.026
Employee size	0.00073	1.14	0.254

Goodness of fit $R^2 = 0.079$ $\chi^2(4) = 19.93$

Omitted NMP variables

	p-value		p-value		p-value
TQM	0.141	LP	0.286	BPR	0.695
WA	0.895	TEAMS	0.145		

Table C3: 2SLS regression results for EMPLOY

Variable	Coefficient	t-statistic	p-value
Constant	9.815	1.17	0.243
Percentage of teams in workforce	0.109	2.97	0.003
Human resource strategy	5.170	2.71	0.007
Hire skill	-3.480	-4.05	< 0.001
Training linked to business strategy	6.740	4.20	< 0.001
Workers are highly skilled	2.970	2.70	0.007
Privately owned	-8.892	-2.79	0.005

Goodness of fit $R^2 = 0.214$ $\chi^2(6) = 156.8$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.811	TQM	0.361	LP	0.280
BPR	0.205	WA	0.611		

Table C4: 2SLS regression results for MGERS

Variable	Coefficient	t-statistic	p-value
Constant	14.829	2.76	0.006
Learning orientation	1.991	2.77	0.006
Hire skill	-1.102	-1.83	0.067
Market turbulence	1.198	2.09	0.037
Percentage of unionisation	-0.071	-3.29	0.001

Goodness of fit $R^2 = 0.060$ $\chi^2(4) = 32.89$

Omitted NMP variables

	p-value		p-value		p-value
TQM	0.477	LP	0.379	BPR	0.419
WA	0.168	TEAMS	0.179		

Table C5: 2SLS regression results for F/T

Variable	Coefficient	t-statistic	p-value
Constant	86.27	14.0	< 0.001
Business process re-engineering	-2.502	-2.00	0.045
Responsible for personal well-being	1.721	1.95	0.051
Employee size	-0.0018	-2.35	0.019
Australian national	-5.450	-2.37	0.018

Goodness of fit $R^2 = 0.046$ $\chi^2(4) = 19.01$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.732	TQM	0.439	LP	0.360
WA	0.311	TEAMS	0.333		

Table C6: 2SLS regression results for EXT

Variable	Coefficient	t-statistic	p-value
Constant	-0.668	-2.98	0.003
Total quality management	-0.111	-2.73	0.006
Work team autonomy	0.058	2.96	0.003
Responsible for personal well-being	0.057	2.13	0.033
Training linked to business strategy	0.149	3.53	< 0.001
Technological turbulence	0.059	1.97	0.049
Australian national	-0.302	-4.00	< 0.001

Goodness of fit $R^2 = 0.148$ $\chi^2(6) = 72.77$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.561	LP	0.583	BPR	0.351
TEAMS	0.237				

Table C7: 2SLS regression results for VET

Variable	Coefficient	t-statistic	p-value
Constant	-2.036	-9.02	< 0.001
Total quality management	0.149	3.80	< 0.001
Business process re-engineering	0.138	2.94	0.003
Human resource strategy	0.169	3.74	< 0.001
Percentage of unionisation	0.006	4.39	< 0.001

Goodness of fit $R^2 = 0.173$ $\chi^2(4) = 102.3$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.307	LP	0.970	WA	0.382
TEAMS	0.443				

Table C8: 2SLS regression results for FORM

Variable	Coefficient	t-statistic	p-value
Constant	-1.300	-5.14	< 0.001
Lean production	-0.105	-2.15	0.031
Work team autonomy	0.063	2.74	0.006
Hire skill	-0.089	-3.41	< 0.001
Training linked to business strategy	0.377	7.64	< 0.001
Technological turbulence	0.109	3.09	0.002
Percentage of unionisation	0.0046	3.54	< 0.001
Australian national	-0.284	-3.40	< 0.001

Goodness of fit $R^2 = 0.303$ $\chi^2(4) = 193.0$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.775	TQM	0.544	BPR	0.508
TEAMS	0.902				

Table C9: 2SLS regression results for BEHAVE

Variable	Coefficient	t-statistic	p-value
Constant	-2.772	-12.40	< 0.001
Learning orientation	0.097	1.99	0.047
Total quality management	0.142	3.69	< 0.001
Human resource strategy	0.122	2.99	0.003
Training linked to business strategy	0.217	4.02	< 0.001
Market turbulence	0.059	2.13	0.033

Goodness of fit $R^2 = 0.301$ $\chi^2(5) = 212.7$

Omitted NMP variables

	p-value		p-value		p-value
LP	0.236	BPR	0.704	WA	0.298
TEAMS	0.357				

Table C10: 2SLS regression results for WORK

Variable	Coefficient	t-statistic	p-value
Constant	-1.661	-7.00	< 0.001
Business process re-engineering	0.102	2.08	0.038
Percentage of teams in workforce	0.002	2.01	0.045
Human resource strategy	0.128	2.56	0.010
Training linked to business strategy	0.159	3.43	< 0.001

Goodness of fit $R^2 = 0.158$ $\chi^2(4) = 70.07$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.928	TQM	0.234	LP	0.529
WA	0.952				

Table C11: 2SLS regression results for COACH

Variable	Coefficient	t-statistic	p-value
Constant	-2.127	-10.4	< 0.001
Learning orientation	0.114	2.20	0.028
Business process re-engineering	0.136	2.44	0.015
Percentage of teams in workforce	0.004	3.90	< 0.001
Training linked to business strategy	0.117	2.01	0.045
Market turbulence	0.069	2.21	0.027

Goodness of fit $R^2 = 0.225$ $\chi^2(5) = 143.1$

Omitted NMP variables

	p-value		p-value		p-value
TQM	0.302	LP	0.816	WA	0.176

Table C12: 2SLS regression results for DECENT

Variable	Coefficient	t-statistic	p-value
Constant	-1.455	-6.00	< 0.001
Learning orientation	0.086	2.03	0.043
Total quality management	0.122	3.06	0.002
Percentage of teams in workforce	0.002	1.92	0.055
Human resource strategy	0.109	2.41	0.016

Goodness of fit $R^2 = 0.102$ $\chi^2(4) = 49.63$

Omitted NMP variables

	p-value		p-value		p-value
LP	0.934	BPR	0.253	WA	0.957

Table C13: Probit GMM results for PLAN

Variable	Coefficient	t-statistic	p-value
Constant	-1.226	-3.22	0.001
Lean production	-0.183	-1.87	0.061
Training linked to business strategy	0.515	4.17	< 0.001
Percentage of unionisation	0.0042	1.71	0.088
Australian national	-0.393	-2.57	0.010

Goodness of fit $R^2 = 0.097$ $\chi^2(4) = 25.30$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.524	TQM	0.458	BPR	0.776
WA	0.494	TEAMS	0.291		

Table C14: Probit GMM results for DEPT

Variable	Coefficient	t-statistic	p-value
Constant	-1.339	-2.94	0.003
Total quality management	-0.326	-3.08	0.002
Training linked to business strategy	0.389	3.02	0.003
Workers are highly skilled	0.167	2.67	0.008
Australian national	-0.531	-2.98	0.003
Privately owned	-0.562	-3.43	< 0.001

Goodness of fit $R^2 = 0.134$ $\chi^2(5) = 35.39$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.126	LP	0.510	BPR	0.118
WA	0.261	TEAMS	0.945		

BEST COPY AVAII

Table C15: Probit GMM results for TMGER

Variable	Coefficient	t-statistic	p-value
Constant	-1.688	-4.62	< 0.001
Lean production	-0.134	-1.77	0.077
Responsible for personal well-being	0.144	3.27	0.001
Training linked to business strategy	0.315	3.79	< 0.001
Employee size	0.00059	3.46	< 0.001

Goodness of fit $R^2 = 0.115$ $\chi^2(4) = 34.20$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.210	TQM	0.566	BPR	0.154
WA	0.928	TEAMS	0.841		

Table C16: Probit GMM results for INSTR

Variable	Coefficient	t-statistic	p-value
Constant	-1.446	-3.16	0.002
Lean production	-0.222	-2.13	0.033
Training linked to business strategy	0.499	4.06	< 0.001
Market turbulence	0.131	2.13	0.033
Percentage of unionisation	0.014	4.74	< 0.001

Goodness of fit $R^2 = 0.091$ $\chi^2(4) = 28.95$

Omitted NMP variables

	p-value		p-value		p-value
LO	0.654	TQM	0.130	BPR	0.127
WA	0.679	TEAMS	0.444		

Appendix D: Explanatory variables

Percentages for bar charts

Explanatory factor	Low	Medium	High
Learning orientation	5.6	54.2	40.2
TQM	6.1	50.2	43.7
Lean production	2.5	53.0	44.5
BPR	6.7	65.0	28.3
Work team autonomy	16.9	61.3	21.9
HR strategy	15.4	53.3	31.2
HR performance	12.8	51.1	36.0
Training with business strategy	4.3	41.7	54.0

Learning orientation and organisational size

Organisational size	Low	Medium	High	Total
Small	2.2	43.0	54.8	100%
Medium	2.4	48.8	48.8	100%
Large	9.4	62.2	28.5	100%

Total quality management and organisational size

Organisational size	Low	Medium	High	Total
Small	3.3	37.0	59.8	100%
Medium	4.3	43.8	51.9	100%
Large	8.6	59.1	32.3	100%

Lean production and organisational size

Organisational size	Low	Medium	High	Total
Small	0.0	43.2	56.8	100%
Medium	1.5	50.0	48.5	100%
Large	4.2	58.8	37.0	100%

Business process re-engineering and organisational size

Organisational size	Low	Medium	High	Total
Small	5.6	65.2	29.2	100%
Medium	4.9	62.1	33.0	100%
Large	8.6	66.8	24.6	100%

BEST COPY AVAILABLE

Work team autonomy and organisational size

Organisational size	Low	Medium	High	Total
Small	3.7	66.7	29.6	100%
Medium	16.3	61.2	22.5	100%
Large	19.8	59.9	20.4	100%

Extent of work teams and organisational size

% of workforce	Small	Medium	Large
0 < % teams ≤ 20%	6.2	5.5	13.4
20 < % teams ≤ 40%	12.6	3.9	15.2
40 < % teams ≤ 60%	12.6	12.5	17.7
60 < % teams ≤ 80%	12.5	21.7	22.0
80 < % teams ≤ 100%	56.1	56.4	31.7
Total	100%	100%	100%

The distribution for organisational size and those organisations who do not use work teams is: 26.9% are small, 32.3% are medium and 40.9% are large organisations.

Learning orientation and industry type

Industry type	Low	Medium	High	Total
Food & beverage manufacturing	6.9	72.4	20.7	100%
Machinery & equipment manufacturing	2.9	44.1	52.9	100%
Construction	7.9	50.0	42.1	100%
Finance & insurance	6.4	76.6	17.0	100%
Retail trade	10.0	33.3	56.7	100%
Other manufacturing	4.7	54.7	40.6	100%
Wholesale trade	6.3	81.3	12.5	100%
Property & business services	7.7	46.2	46.2	100%

Total quality management and industry type

Industry type	Low	Medium	High	Total
Food & beverage manufacturing	10.7	53.6	35.7	100%
Machinery & equipment manufacturing	2.9	42.9	54.3	100%
Construction	0.0	42.1	57.9	100%
Finance & insurance	14.9	72.3	12.8	100%
Retail trade	6.3	37.5	56.3	100%
Other manufacturing	2.8	43.4	53.8	100%
Wholesale trade	3.7	50.0	46.3	100%
Property & business services	11.5	50.0	38.5	100%

Lean production and industry type

Industry type	Low	Medium	High	Total
Food & beverage manufacturing	0.0	65.5	34.5	100%
Machinery & equipment manufacturing	2.9	37.1	60.0	100%
Construction	0.0	52.6	47.4	100%
Finance & insurance	4.4	82.2	13.3	100%
Retail trade	3.2	35.5	61.3	100%
Other manufacturing	0.0	43.8	56.2	100%
Wholesale trade	0.0	50.9	49.1	100%
Property & business services	7.7	65.4	26.9	100%

Business process re-engineering and industry type

Industry type	Low	Medium	High	Total
Food & beverage manufacturing	6.9	72.4	20.7	100%
Machinery & equipment manufacturing	8.6	57.1	34.3	100%
Construction	2.6	73.7	23.7	100%
Finance & insurance	12.8	74.5	12.8	100%
Retail trade	6.5	54.8	38.7	100%
Other manufacturing	2.9	65.7	31.4	100%
Wholesale trade	7.4	59.3	33.3	100%
Property & business services	11.5	65.4	23.1	100%

Work team autonomy and industry type

Industry type	Low	Medium	High	Total
Food & beverage manufacturing	38.9	55.6	5.6	100%
Machinery & equipment manufacturing	53.3	33.3	13.3	100%
Construction	19.0	66.7	14.3	100%
Finance & insurance	15.4	73.1	11.5	100%
Retail trade	11.1	61.1	27.8	100%
Other manufacturing	14.8	75.4	9.8	100%
Wholesale trade	14.3	52.4	33.3	100%
Property & business services	5.6	55.6	38.9	100%

Extent of work teams and industry type

% of workforce	Food & beverage manufacturing	Machinery & equipment manufacturing	Construction	Finance & insurance
0 < % teams ≤ 20%	18.8	16.7	0.0	3.6
20 < % teams ≤ 40%	12.5	5.6	5.0	14.3
40 < % teams ≤ 60%	31.3	38.9	5.0	14.3
60 < % teams ≤ 80%	12.4	16.7	15.0	14.3
80 < % teams ≤ 100%	25.0	22.1	75.0	53.5
Total	100%	100%	100%	100%

Extent of work teams and industry type

% of workforce	Retail trade	Other manufacturing	Wholesale trade	Property & business services
0 < % teams ≤ 20%	11.1	15.4	9.4	5.6
20 < % teams ≤ 40%	11.1	7.9	19.1	5.6
40 < % teams ≤ 60%	11.1	20.3	4.8	11.1
60 < % teams ≤ 80%	27.8	17.3	28.6	11.2
80 < % teams ≤ 100%	38.9	39.1	38.1	66.5
Total	100%	100%	100%	100%

Appendix E: Modelling results

This appendix takes each of the measures for training practices discussed in chapter 3 and models them against the explanatory variables discussed in chapter 4. This allows us to describe the key variables amongst new management practices that determine each of the training practices.

Percentage of payroll devoted to training

Figure 19 summarises the preferred model for the percentage of payroll spent on training by enterprises in 1996/97 (PAY97) and figure 20 for 1997/98 (PAY98). Detailed statistical results appear in table C1 of appendix C. Three statistically important positive relations have been identified for PAY97 and PAY98. Interestingly, size is not a statistically significant variable for the percentage of payroll spent on training in the enterprises. Many other studies have concluded that size is the key determining variable of training expenditure including the ABS Training Expenditure series and the Industry Training Studies carried out by members of the present team (Smith & Hayton 1999). However, this model shows that the variables of learning orientation, human resource performance and technological turbulence are more significant in their determination of training expenditure than size. Of the new management practices, learning orientation is the only NMP to impact on training expenditure.

Figure 19: Percentage of payroll devoted to training in 1996/97

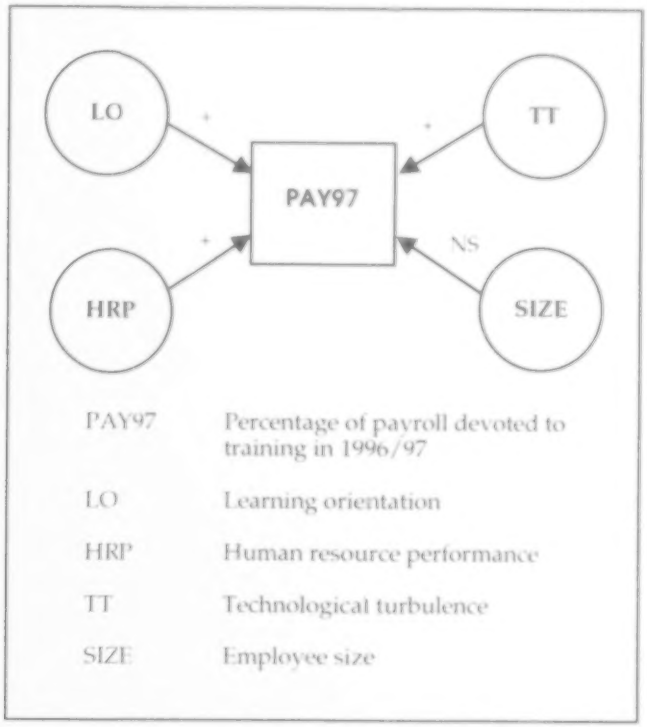
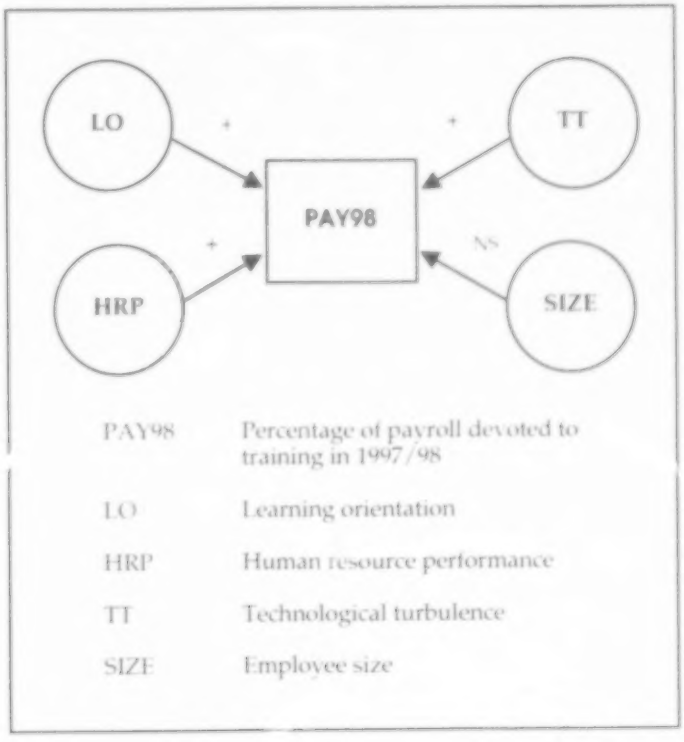


Figure 20: Percentage of payroll devoted to training in 1997/98

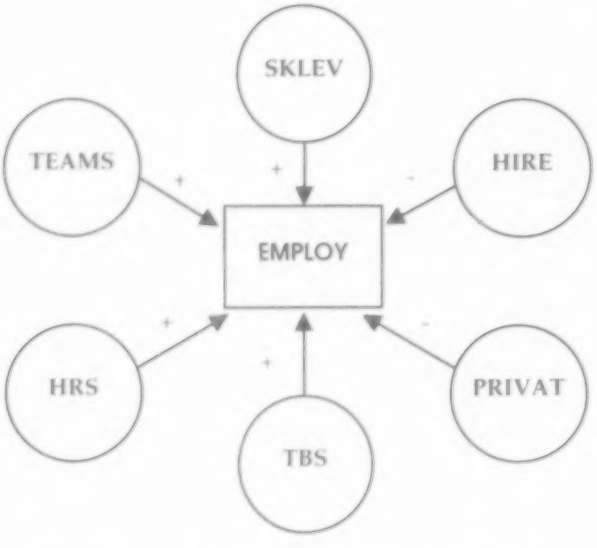


Percentage of employees involved in training

Figure 21 summarises the results for the percentage of employees involved in training (EMPLOY). Detailed statistical results appear in table C3 of appendix C. Four statistically important positive relations have been identified: percentage of teams in workforce; human resource strategy; training linked to business strategy; and workers are highly skilled. This suggests that the issue of strategy is important in the determination of the numbers of employees who receive training. The higher the level of integration of training and HR policy with business strategy, the greater the numbers of employees trained in the enterprises. Moreover, the higher the overall skill levels of the enterprise, the higher the numbers of employees trained. This accords with analyses of the ABS Training and Experience surveys that have shown that the skill level of employees is an important determinant of the level of training they receive (Baker & Wooden 1992). The only NMP to have a positive correlation is the extent of teamwork. This suggests that the existence of teams encourages a greater provision of training.

Two statistically important negative relations were identified: the extent to which skills are an important criterion for hiring and private ownership. The skills hiring criterion is logical and conforms to the predictions of human capital theory that enterprises will not train if they can hire skills into the enterprise. The private ownership issue suggests that the paternalism often associated with non-listed companies finds expression also in the number of employees who receive training.

Figure 21: Percentage of employees involved in training



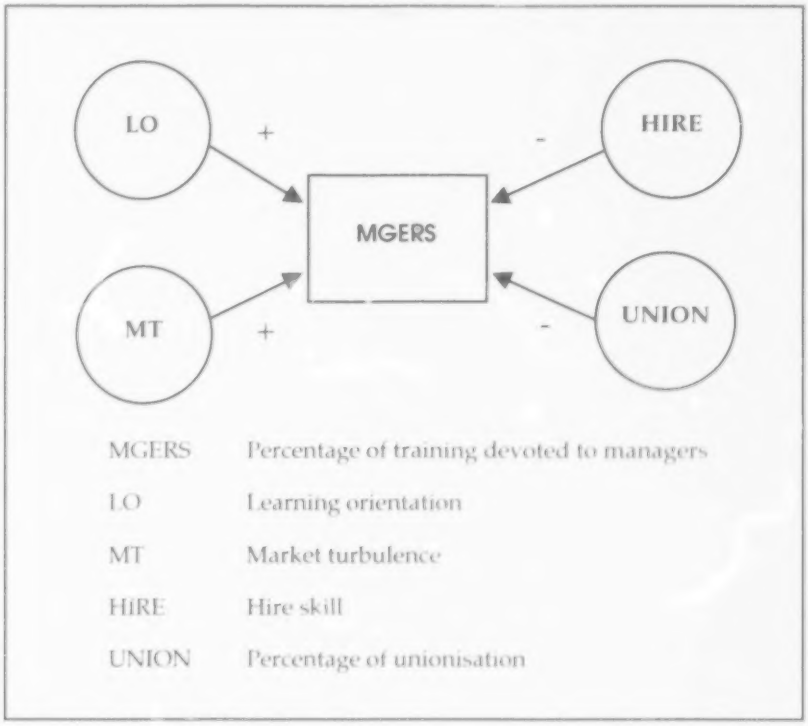
EMPLOY	Percentage of employees involved in training
TEAMS	Percentage of teams in workforce
HRS	Human resource strategy
TBS	Training linked to business strategy
SKLEV	Workers are highly skilled
HIRE	Hire skill
PRIVAT	Privately owned

Percentage of training devoted to managers

Figure 22 summarises the preferred model for the percentage of training devoted to managers (MGERS). Detailed statistical results appear in table C4 of appendix C. Two statistically important positive relations were identified: learning orientation and market turbulence. Thus, learning orientation plays an important role in the training of managers as well as the overall level of expenditure on training. Market turbulence measures the demand for new products or services in the enterprise's market and suggests that higher levels of product/service demand require a more highly trained cadre of managers in enterprises to manage the process of product/service development and launch.

Two statistically important negative relations were identified: hire skill and percentage of unionisation. Thus, as with the results for the percentage of employees receiving training, higher levels of skills also implies the existence of higher levels of management skills, thereby reducing the need for management training. The effect of unionisation on training provision in enterprises has been the subject of some debate recently (Stuart 1996; Heyes & Stuart 1998). This result confirms Heyes and Stuart's view that the presence of strong unions on site tends to increase the opportunities for lower level employees to receive training and equalise the spread of training in the workforce, thus reducing the emphasis on training for managers.

Figure 22: Percentage of training devoted to managers

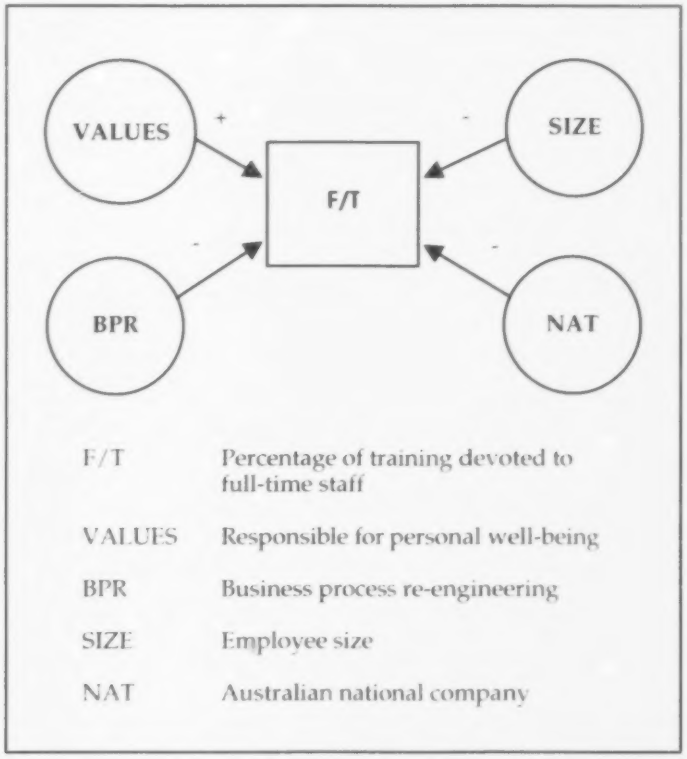


Percentage of training devoted to full-time employees

Figure 23 summarises the results for the percentage of training devoted to full-time employees (F/T). Detailed statistical results appear in table C5 of appendix C. Only one statistically important positive relation was identified; that for responsibility for personal well-being. This result suggests that enterprises may view training as, at least partly, an investment in the health of employees; a finding that corroborates work by Osterman (1995) in the US which showed that enterprises that are committed to the personal well-being of employees provide more training.

Three statistically important negative relations were identified: business process re-engineering, numbers of employees and being an Australian national company. These factors may reflect the potential concentration of part-time and casual staff produced by the use of re-engineering principles to cut employee costs, the propensity of larger enterprises to use cheaper labour and the relative growth of part-time and casual jobs in Australian enterprises compared with the OECD average (OECD 1994).

Figure 23: Percentage of training devoted to full-time employees

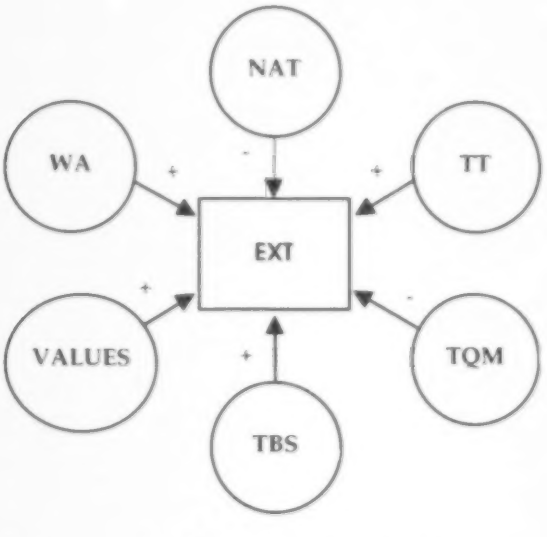


Reliance on external training

Figure 24 summarises the results for reliance on external training (EXT). Detailed statistical results appear in table C6 of appendix C. Four statistically important positive relations were identified: work team autonomy, responsibility for personal well-being, training linked to business strategy and technological turbulence. The relationship of work team autonomy to external training suggests that as teams take on wider decision-making powers, the requirement for specialist training that the enterprise cannot resource internally increases. As with the results for the level of training devoted to full-time employees, the significance of the enterprise's attitude towards the personal well-being of their employees indicates that this extends to possible provision of externally recognised, accredited training. The importance of business strategy suggests that where training is closely linked to strategy, the enterprise is more prepared to look outside for training that actually fits the specific needs of the organisation. Similarly with technological turbulence, as technology in an industry increases in sophistication, the need for external, expert training increases.

Two statistically important negative relations were identified: total quality management and being an Australian national company. These results suggest that much of the training associated with TQM is internally resourced. External consultants often begin the training process in enterprises but hand over the responsibility for ongoing training to internal trainers. The issue of Australian ownership may suggest that Australian enterprises have a lower propensity to establish their own, in-house training departments and rely more heavily on external training providers.

Figure 24: Reliance on external training



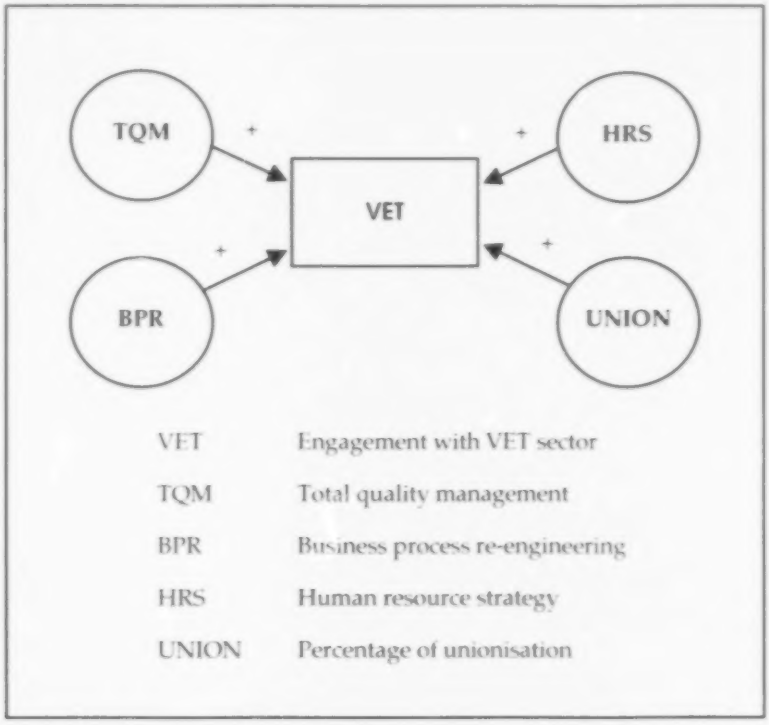
EXT	Reliance on external training
WA	Work team autonomy
VALUES	Responsible for personal well-being
TBS	Training linked to business strategy
TT	Technological turbulence
TQM	Total quality management
NAT	Australian national

Engagement with VET sector

Figure 25 summarises the results for engagement with the VET sector (VET). Detailed statistical results appear in table C7 of appendix C. Four statistically important positive relations were identified: total quality management, business process re-engineering, human resource strategy and the percentage of unionisation. In this project, engagement with the VET sector reflects primarily the use of competency standards in training and the use of accredited training. It is possible that the implementation of TQM or re-engineering involves the development of standards that feed into and work in parallel with competency standards. However, no obvious explanation emerges for this correlation, nor does it reflect other research. The integration of human resource policies with business strategy may result in a focus on individual competencies as a result of an analysis of enterprise competencies (Kamoche 1996). The significance of unions in the enterprise to the use of competency standards and accredited training is well-documented in the Australian context (Smith & Hayton 1999).

No statistically important negative relations were identified.

Figure 25: Engagement with VET sector

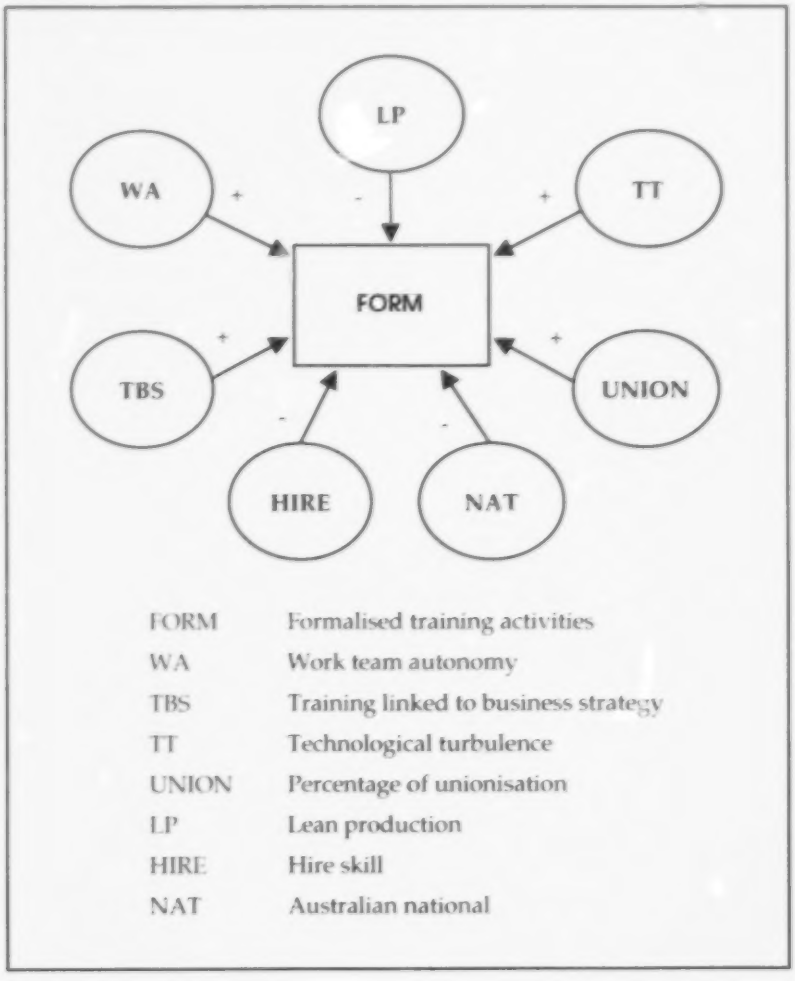


Formalised training activities

Figure 26 summarises the preferred model for the level of formalisation in training activities (FORM). Detailed statistical results appear in table C8 of appendix C. Four statistically important positive relations were identified: work team autonomy, training linked to business strategy, technological turbulence and the percentage of unionisation. As noted previously, an increase in the autonomy of work teams may lead to a requirement for more sophisticated training and thus the link to greater formalisation of training is not surprising. Similarly, increasing technological sophistication may lead to the need for more formal training. The link between unionisation of more formal training practices has been commented on in the British context (Heyes & Stuart 1998). As training becomes more closely linked to the business strategy of the enterprise, the findings suggest that the enterprise is able to articulate its training needs more clearly, leading to a higher level of formalisation of the training process.

Three statistically important negative relations were identified: lean production, hire skill and being an Australian national company. It is not surprising that enterprises adopting lean production methods will seek to cut down costs wherever possible, leading to a more informal approach to training. Similarly, the requirement for training appears to decrease if enterprises hire for skill resulting in a reduced requirement for formalised training.

Figure 26: Formalised training activities



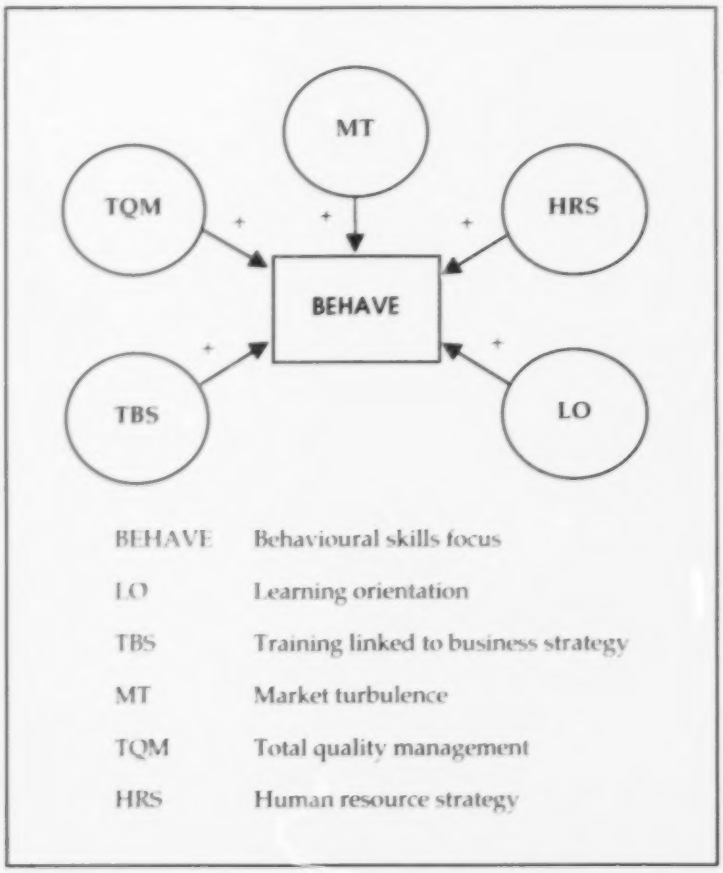
FORM	Formalised training activities
WA	Work team autonomy
TBS	Training linked to business strategy
TT	Technological turbulence
UNION	Percentage of unionisation
LP	Lean production
HIRE	Hire skill
NAT	Australian national

Behavioural skills focus

Figure 27 summarises the results for a behavioural skills focus in the training activities of enterprises (BEHAVE). Detailed statistical results appear in table C9 of appendix C. Five statistically important positive relations have been identified: learning orientation, total quality management, human resource strategy, training linked to business strategy and market turbulence. Two NMPs are directly correlated with a focus on behavioural skills training—learning orientation and the adoption of TQM. This substantially confirms evidence from the USA that the adoption of high performance work practices (including TQM) leads to a shift in training focus from technical to behavioural skills, as employees are required to work more closely with others and accept a higher degree of responsibility for their work. Similarly, a greater learning orientation in the enterprise might be expected to highlight the importance of developing non-technical skills such as problem-solving and lifelong learning. The findings also emphasise the importance of linking training and other human resource management practices to business strategy for the development of behavioural skills. This linkage of business strategy to the development of behavioural skills in training also sits well with the identification of the importance of market turbulence. As markets become more competitive, it appears that enterprises take a more strategic approach to their human resource management practices and recognise the importance of developing the innovative skills of their employees to obtain sustainable competitive advantage (Smith 1997).

No statistically important negative relations were identified.

Figure 27: Behavioural skills focus

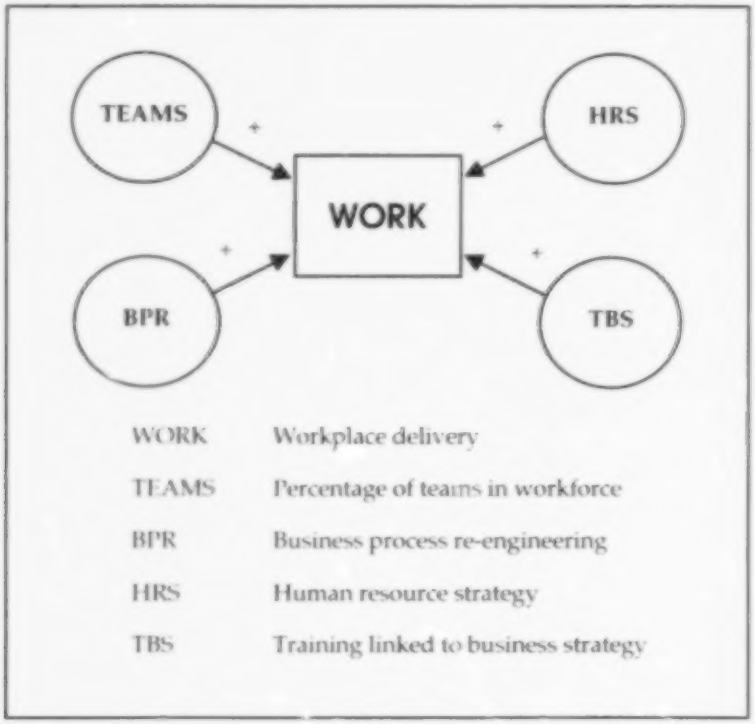


BEHAVE	Behavioural skills focus
LO	Learning orientation
TBS	Training linked to business strategy
MT	Market turbulence
TQM	Total quality management
HRS	Human resource strategy

Workplace delivery

Figure 28 summarises the results for the extent of workplace delivery of training (WORK). Detailed statistical results appear in table C10 of appendix C. Four statistically important positive relations were identified: business process re-engineering, percentage of teams in the workforce, human resource strategy and training linked to business strategy. The significance of BPR may arise from the extreme cost-cutting nature of the process (Drago 1996) which eschews the establishment of dedicated facilities of the type that would be needed for training delivered off the job. However, as a subsequent model reveals, BPR is not linked with the absence of specialist training departments or training managers. The relationship of workplace delivery to the extent of teamworking seems logical, since much of the training that is associated with the introduction of teamworking might well be best delivered in the workplace. The importance of strategy and its links to HR policy and training perhaps underlines the increasing importance of workplace delivery and its perceived effectiveness in ensuring high quality training outcomes for enterprises. No statistically important negative relations were identified.

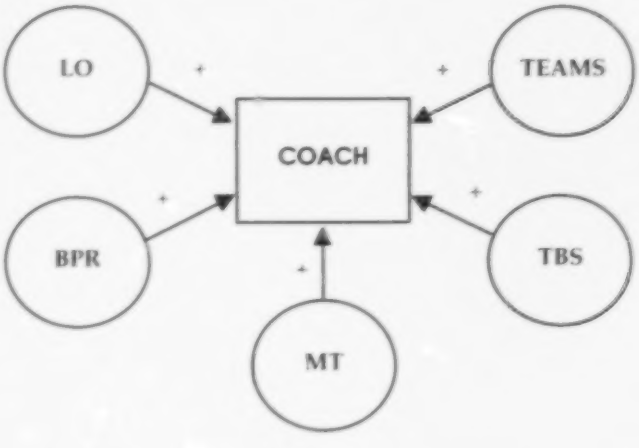
Figure 28: Workplace delivery



Coaching and/or mentoring

Figure 29 summarises the results for the incidence of coaching/mentoring (COACH). Detailed statistical results appear in table C11 of appendix C. Five statistically important positive relations were identified: learning orientation, business process re-engineering, percentage of teams in workforce, training linked to business strategy and market turbulence. The significance of learning orientation underlines the emerging importance of coaching and mentoring as part of the philosophy of the learning organisation (Raper et al. 1997). The extent of teamworking has been related to workplace delivery of training and it would seem to be logical also that it is related to the use of coaching and mentoring as primary techniques in workplace delivery. A similar logic may apply to the significance of BPR. The importance of strategy is again highlighted by the inclusion of training related to business strategy and underlined by the significance of market turbulence which, as discussed earlier, may act as a trigger to more strategic thinking within enterprises. This result seems to underline the importance of workplace methods of training to a strategic view of training in the enterprise. No statistically important negative relations were identified.

Figure 29: Coaching and/or mentoring

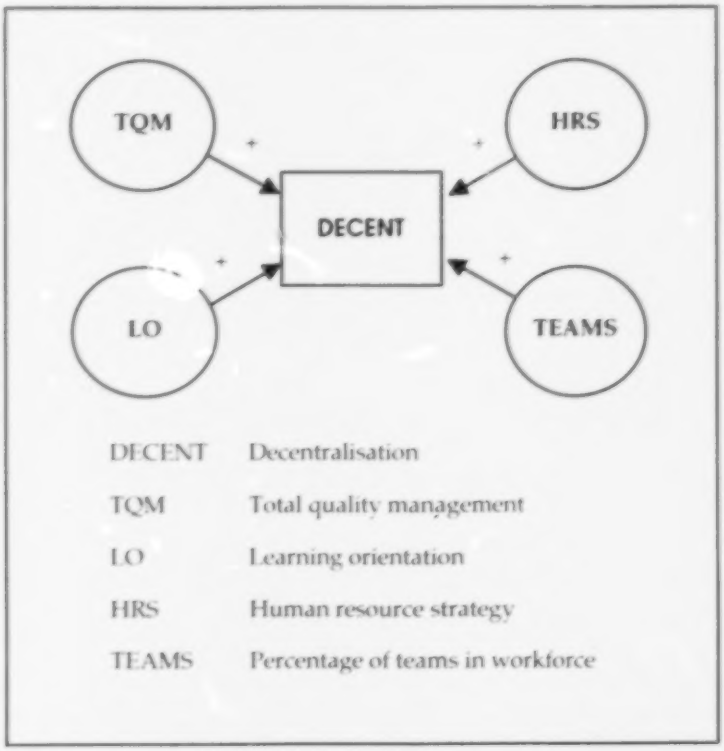


COACH	Coaching and/or mentoring
LO	Learning orientation
BPR	Business process re-engineering
TEAMS	Percentage of teams in workforce
TBS	Training linked to business strategy
MT	Market turbulence

Decentralisation

Figure 30 summarises the results for the decentralisation of responsibility for training to line managers (DECENT). Detailed statistical results appear in table C12 of appendix C. Four statistically important positive relations were identified: learning orientation, total quality management, percentage of teams in workforce and human resource strategy. The importance of learning orientation to the presence of decentralised training responsibility confirms the findings of research into the spread of the learning organisation in British enterprises (Raper et al. 1997) which suggested that decentralisation was the single most pervasive change in training arrangements to occur in enterprises professing a learning orientation. The importance of TQM appears logical given the basic premise of the TQM system which is to decentralise responsibility for all processes in rents to the lowest possible level (Sitkin et al. 1994). The significance of the extent of teamworking in the enterprise follows on from the importance of teamworking to the adoption of workplace methods of delivery and coaching/mentoring which are consistent with a decentralised training function. Similar comments apply to the apparent importance of strategy to decentralisation. No statistically important negative relations were identified.

Figure 30: Decentralisation



Existence of a written training plan

Figure 31 summarises the results for the existence of a written training plan, the first of the dichotomous training variables (PLAN). Detailed statistical results appear in table C13 of appendix C. Two statistically important positive relations were identified: training linked to business strategy and percentage of unionisation. The importance of the link to business strategy appears to be consistent with the production of a written training plan, based presumably on the business strategy of the enterprise. The significance of unionisation confirms the importance of unionisation to the existence of a more formalised approach to training of which a training plan would be an integral part.

Two statistically important negative relations have been identified: lean production and being an Australian national company. The cost cutting nature of lean production has already been identified with a less formalised approach to training. The lack of a written training plan would fit this less formal approach. A similar logic applies to the significance of Australian national ownership of the enterprise.

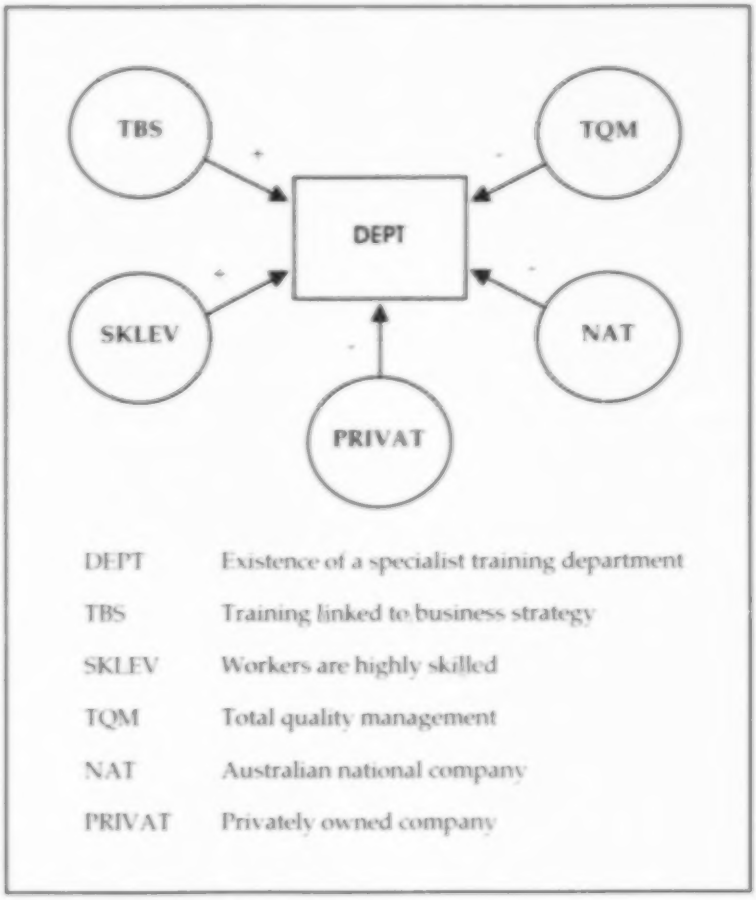
Figure 31: Existence of a written training plan

Existence of a specialist training department

Figure 32 summarises the results for the existence of a specialist training department (DEPT). Detailed statistical results appear in table C14 of appendix C. Two statistically important positive relations were identified: training linked to business strategy and workers being highly skilled. These two factors reflect the factors that were significant for the percentage of employees receiving training from their enterprises described earlier. Thus, both the levels of skill of the workforce and the relationship of training to business strategy tend to drive higher levels of training amongst employees and the existence of a training department.

Three statistically important negative relations were identified: total quality management, being an Australian national company and being a privately owned company. The significance of TQM to the decentralisation of training is consistent with its relationship to the absence of a training department. Privately owned, Australian enterprises also appear to be less likely to invest in the existence of a specialist training department.

Figure 32: Existence of a specialist training department

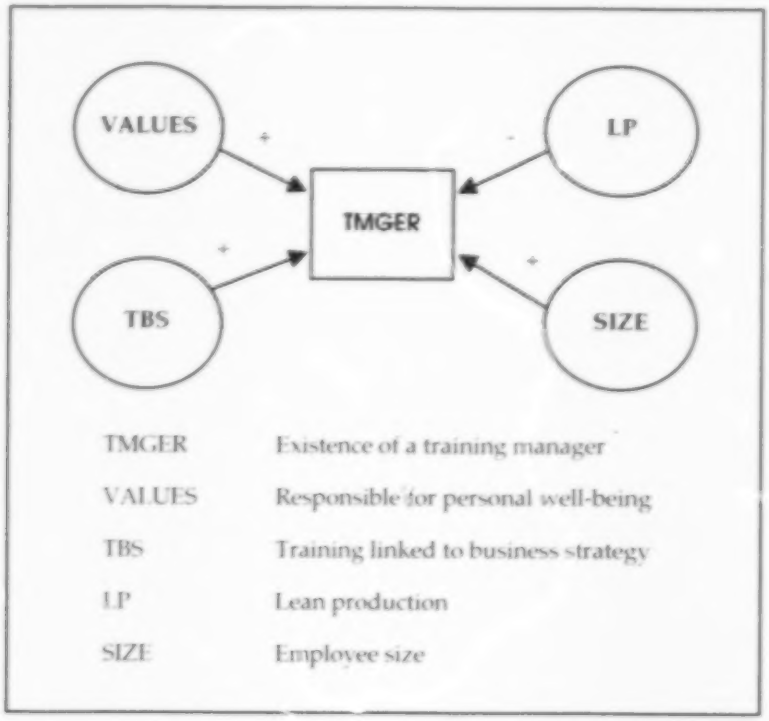


Existence of a training manager

Figure 33 summarises the results for the existence of a training manager (TMGER). Detailed statistical results appear in table C15 of appendix C. Three statistically important positive relations were identified: responsibility for personal well-being, training linked to business strategy and numbers of employees. Interestingly, these factors are different from those associated with the existence of a specialist training department. This result suggests that many training managers may be sole operators not often enjoying the support of a full training department. However, consistent with the existence of a training department, the existence of a training manager appears to be also related to the existence of a close link between training and business strategy in the enterprise. The positive relationship to the size of the enterprise is not surprising, given the higher resource availability in larger enterprises.

Only one statistically important negative relation was identified: lean production. Again, the cost cutting nature of lean production would tend to reduce the likelihood of the existence of a training manager.

Figure 33: Existence of a training manager

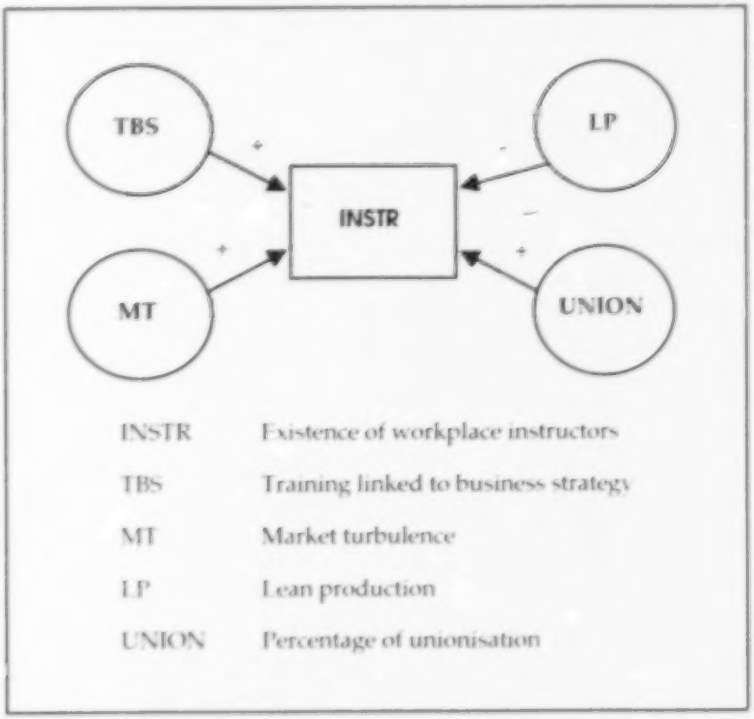


Existence of workplace trainers/instructors

Figure 34 summarises the results for the existence of workplace trainers / instructors (INSTR). Detailed statistical results appear in table C16 of appendix C. Three statistically important positive relations were identified: training linked to business strategy, market turbulence and percentage of unionisation. The link to business strategy may be underlined by the appearance of market turbulence as a strong factor which encourages the development of a more strategic approach in the enterprise. The significance of unionisation for the existence of workplace trainers—an essentially decentralised phenomenon—contrasts with the other factors to which unionisation is related—engagement with VET, formalisation of training and the existence of a training plan which could be considered to be indicators of a more centralised and formalised approach to training.

Only one statistically important negative relation was identified: lean production. This conforms to the general association of lean production with less formalisation, the absence of a training plan and the absence of a training manager.

Figure 34: Existence of workplace trainers/instructors



NCVER

The National Centre for Vocational Education Research is Australia's primary research and development organisation in the field of vocational education and training.

NCVER undertakes and manages research programs and monitors the performance of Australia's training system.

NCVER provides a range of information aimed at improving the quality of training at all levels.

ISBN 0 87397 021 1 print edition
ISBN 0 87397 022 X web edition

BEST COPY AVAILABLE